

20-1025 (Lead); 20-1138 (Consolidated)

**UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

ENVIRONMENTAL HEALTH TRUST; CONSUMERS FOR SAFE CELL
PHONES; ELIZABETH BARRIS; THEODORA SCARATO

CHILDREN'S HEALTH DEFENSE; MICHELE HERTZ; PETRA BROKKEN;
DR. DAVID O. CARPENTER; DR. PAUL DART; DR. TORIL H. JELTER; DR.
ANN LEE; VIRGINIA FARVER, JENNIFER BARAN; PAUL STANLEY, M.Ed.

Petitioners

v.

FEDERAL COMMUNICATIONS COMMISSION;
UNITED STATES OF AMERICA

Respondents

Petition for Review of Order Issued by the
Federal Communications Commission

PETITIONERS' JOINT OPENING BRIEF ADDENDUM VOLUME II
(PAGES AD_00116-AD_00281)

Edward B. Myers
Law Office of Edward B. Myers
14613 Dehaven Court
North Potomac, MD 20878
Phone: 717-752-2032
edwardmyers@yahoo.com

W. Scott McCollough
McCollough Law Firm, P.C.
2290 Gatlin Creek Rd.
Dripping Springs, TX 78620
Phone: 512-888-1112
wsmc@dotlaw.biz

Counsel for Petitioners 20-1025

Counsel for Petitioners 20-1138

TABLE OF CONTENTS

STATUTES AND REGULATIONS	AD_00001
---------------------------------------	-----------------

FEDERAL STATUTES

42 U.S.C. §4331	AD_00003
42 U.S.C. §4332	AD_00004
47 U.S.C. §151	AD_00006
47 U.S.C. §152	AD_00007
47 U.S.C. §154	AD_00008
47 U.S.C. §253	AD_00015
47 U.S.C. §254	AD_00016
47 U.S.C. §302a.....	AD_00027
47 U.S.C. §303	AD_00030
47 U.S.C. §305	AD_00036
47 U.S.C. §306	AD_00037
47 U.S.C. §307	AD_00038
47 U.S.C. §321	AD_00040
47 U.S.C. §324	AD_00041
47 U.S.C. §332	AD_00042
47 U.S.C. §336	AD_00047
47 U.S.C. §414	AD_00055
47 U.S.C. §601	AD_00056
47 U.S.C. §925	AD_00057
47 U.S.C. §1455	AD_00059

FEDERAL REGULATIONS

40 C.F.R. §1500.1	AD_00063
40 C.F.R. §1508.9	AD_00064
40 C.F.R. §1508.11	AD_00065
40 C.F.R. §1508.13	AD_00066

40 C.F.R. §1508.27	AD_00067
47 C.F.R. §1.1310	AD_00068
47 C.F.R. §2.1	AD_00072
47 C.F.R. §2.201	AD_00090
47 C.F.R. §2.1049	AD_00093
47 C.F.R. §15.231	AD_00097
47 C.F.R. §73.128	AD_00100
47 C.F.R. §73.681	AD_00102
47 C.F.R. §73.1570	AD_00106
47 C.F.R. §74.463	AD_00107
47 C.F.R. §78.115	AD_00108
47 C.F.R. §87.141	AD_00109
47 C.F.R. §95.975	AD_00111
47 C.F.R. §101.141	AD_00112
47 C.F.R. §101.811	AD_00115

SUPPORTING AFFIDAVITS AND DECLARATIONS	AD_00116
Affidavit of Dafna Tachover in Support of Standing	AD_00117
Affidavit of Dr. Paul Dart, MD in Support of Standing	AD_00131
Affidavit of Virginia Farver in Support of Standing.....	AD_00145
Affidavit of Dr. Toril Jelter, MD in Support of Standing.....	AD_00153
Affidavit of Hannah McMahon in Support of Standing	AD_00164
Affidavit of Ysobel Gallo in Support of Standing	AD_00282
Affidavit of Paul Stanley in Support of Standing	AD_00290
Affidavit of Jennifer Baran in Support of Standing	AD_00297
Affidavit of Dr. Erica Elliot, MD in Support of Standing	AD_00306

Affidavit of Petra Broken in Support of Standing	AD_00312
Affidavit of Angela Tsiang in Support of Standing.....	AD_00319
Affidavit of Dr. Ann Lee in Support of Standing	AD_00328
Affidavit of Mary Adkins in Support of Standing	AD_00337
Affidavit of Michele Hertz in Support of Standing	AD_00413
Affidavit of Professor David Carpenter, MD in Support of Standing	AD_00419
Declaration of Devra Lee Davis in Support of Standing	AD_00482
Declaration of Cynthia Franklin in Support of Standing	AD_00499
Declaration of Theodora Scarato in Support of Standing	AD_00505
Declaration of Liz Barris in Support of Standing	AD_00520

SUPPORTING AFFIDAVITS AND DECLARATIONS

Affidavit of Dafna Tachover in Support of Standing

**UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

Children’s Health Defense, Michele Hertz,)	
Petra Brokken, Dr. David O. Carpenter, Dr.)	
Paul Dart, Dr. Toril H. Jelter, Dr. Ann Lee,)	
Virginia Farver, Jennifer Baran, Paul	)	Case No: 20-1138
Stanley, M.Ed.)	
Petitioners	)	Petition for Review of Order by the Federal
	)	Communications Commission
	)	(FCC 19-126)
v.)	
	)	(Consolidated with Case No. 20-1025)
Federal Communications Commission and)	
United States of America,)	
Respondents)	

AFFIDAVIT OF DAFNA TACHOVER IN SUPPORT OF STANDING

1. My name is Dafna Tachover. I am Director of the Children’s Health Defense 5G and Wireless Harms Project. I am also a member of Children’s Health Defense.
2. The purpose of this Affidavit is to provide evidentiary support for Children’s Health Defense’s Article III standing to pursue this matter on its own behalf and on behalf of its members. I will provide some of the basic facts particular to the injuries suffered by the Children’s Health Defense members, and will also explain why Children’s Health Defense has suffered an injury-in-fact traceable to the FCC Order that could be redressed by an order from this Court holding unlawful, vacating, enjoining, and/or setting aside the FCC Order and remanding the matter to the FCC for further consideration and action.
3. Children’s Health Defense (“CHD”) is a non-profit organization. Its mission is to end the epidemic of children’s chronic health conditions by working aggressively to eliminate harmful exposures to toxins and to establish safeguards. CHD educates about the harms of various toxins, provides advice, supports the injured and advocates on their behalf in educational and legal matters. Our purposes are to defend children’s health, obtain justice for those already injured and ensure accountability.
4. Radiofrequency (RF) based wireless technologies and the pulsed and modulated radiation they emit (RFR) are harmful agents, which are contributing to the growing epidemic of sickness among children. CHD’s mission requires that it address wireless radiation’s contribution to the epidemic of toxicity-related sicknesses in children.
5. I am contacted daily by parents whose children are being affected by this radiation and who are desperate for solutions. I interact with doctors on a daily basis who are presented with children that are sick from exposure to wireless radiation. Parents usually have no idea that radiation from wireless devices and infrastructure may be the cause or major contributing agent to their child’s symptoms. Once they become aware, their child’s physical and mental health almost always improves after removal and/or disablement of the wireless devices in the home. Dr. Toril Jelter and Dr. Paul Dart’s affidavits provide more detail on this topic.

AFFIDAVIT OF DAFNA TACHOVER IN SUPPORT OF STANDING

6. I also engage with teachers who attest that they observe adverse impacts from wireless devices in their classrooms or nearby cell towers in terms of the health and cognitive abilities of their students. The effect is especially pronounced with special needs children whose underlying conditions are often triggered or exacerbated when the child is exposed to wireless radiation.¹

7. While the radiation below FCC levels is termed “low intensity”, the radiation from non-natural pulsed and modulated RFR-based technology is at levels that can be even quintillion times (100,000,000,000,000,000,000) higher than what our bodies evolved to tolerate. This radiation is now prevalent and constant. Any notion that these non-thermal emissions at “FCC approved” levels can be assumed to be safe and that there is no adverse biological effect is absurd. Our brains are electric, our hearts are electric, our nervous systems are electric and our cells communicate electrically. The question is not how RFR-based technology can affect us, but how can anyone who claims otherwise can be taken seriously.

8. No one can rationally deny that non-ionizing, “low intensity” Electromagnetic Fields (EMFs) and Electromagnetic Radiation (EMR) affect our biology. Doctors routinely use them for beneficial medical purposes. EMFs have long been used for medical purposes to treat bone fractures, advanced carcinoma and chronic pain.² These treatments would not work if human bodies were unaffected by non-ionizing, non-thermal pulsed and modulated emissions.

9. Wireless radiation is involved in the increase of many health problems and diseases in the past 10-20 years. Radiation Sickness (also variously called Microwave Sickness; Electro-Sensitivity, Electro Hypersensitivity or EHS), is likely the most immediate and widespread manifestation of wireless harms. It is a constellation of mainly neurological symptoms from exposure to RF-based technologies. ADHD, fertility problems, cancers, anxiety are some of the others. Ample scientific evidence exists to correlate the increase in rates of these conditions to the exponential increase in exposure to pulsed and modulated RFs from wireless technology. While the wireless industry is making money, the injured and their families must bear the financial, health and emotional costs. Like many of our members, I personally, have had to bear these costs after developing Radiation Sickness.

Personal and Professional Background

10. I am a licensed attorney in NY and Israel. I have an MBA and a technology background. I was a telecommunications and computer officer in the Israeli Defense Forces, where I served as the commander of the military headquarters and operations center computer center and was responsible for all the systems and networks. After my military service, I taught middle-school science and electronics. After completing my law degree, I worked for the Jerusalem’s District Attorney and had a diverse legal and business career thereafter. In the US, I worked in senior executive positions for an international investment company headquartered in NYC.

11. Because of my telecommunications background, I was an early adopter and an avid user of wireless technology. But my love affair with wireless technology ended abruptly in July 2009, when I developed Radiation Sickness. As a result, since 2012, I have dedicated myself to

¹ <https://ecfsapi.fcc.gov/file/106070048305926/Doctor-Letters-on-Wi-Fi-In-School-Full-Compilation.pdf>, p. 1-8

² <https://ecfsapi.fcc.gov/file/7520940776.pdf>; <https://ecfsapi.fcc.gov/file/7520940777.pdf>

AFFIDAVIT OF DAFNA TACHOVER IN SUPPORT OF STANDING

working to expose the harms of wireless technology to the public and to advocate for the injured and for change.

12. In 2009, I lived in Princeton, NJ. My husband at that time, who is an MD with a PhD in Molecular Biology, was working for Princeton University as a research scientist. We were hoping to start a family, and I decided to start a law practice. It all changed when I started reacting to the new Apple laptop that I had just purchased.

13. When I was using the laptop, I would get tingling in my hands and feet. I thought there was an electric problem with the laptop and returned it. I ended up changing 5 laptops in 3 weeks. With every laptop, I experienced more and more symptoms, including severe headaches, chest pains, and heart palpitations. I had difficulties breathing, cognitive problems, memory problems, nausea, dizziness, and felt intense heat on my face. Suddenly, I also could not use my cell phone. When I put it to my head, I felt as if someone was drilling in my brain. It became clear to me and to my then-husband that these wireless devices were making me sick.

14. My condition continued to deteriorate. Within 6 months, I was no longer able to be in my apartment. I could not be anywhere or sleep anywhere near wireless radiation. I started living in my car, desperately trying to find places with no radiation to spend the day and night. Living in my car was certainly never any part of my life plan. Life became a living hell; the pain was intolerable. As an athlete and soldier, I was familiar with pain, but what I experienced was beyond mere pain: it was torture.

15. I was evaluated and diagnosed by three doctors. Professor William Meggs, MD, PhD, a Prof. of Emergency Medicine and Toxicology blind tested me. I could reliably detect EMFs. The blinded test also showed that my heart rate increased whenever I was exposed. My personal story and Dr. Meggs' diagnosis are part of the evidence that was before the Commission.³

16. It became clear that I had to remove myself completely from society and all wireless radiation exposure if I wanted to have any chance of getting better. I decided to move to the Catskills in upstate NY. This is a sparsely populated nature reserve. The mountains block radiation, and wireless-free spots still existed. It also became clear that my life was forever changed, so I decided to divorce my husband. I felt it was enough that my own life had been destroyed; I did not want to ruin his as well. The house in the Catskills saved my life.

17. While I am still highly intolerant to radiation, three years of isolation in the Catskills improved my condition. It is still difficult to survive the time I spend advocating and suffering forced exposure to RFR; there are always ramifications. I otherwise avoid exposure as much as possible, and only by doing so can I survive the exposure necessary to do this work.

18. The increased use of wireless because of the FCC's continuous push, and the growing intensity and more complex modulations, have made it increasingly challenging for me to spend time "in the world." My health has been deteriorating, especially in the past few months, with the intensification of the deployment of 5G in the area where I currently stay.

19. I wanted to understand how something I loved so much and depended on could destroy my life to such an extent, without me ever hearing anything cautionary about it. Well, in fact, I

³ <https://ecfsapi.fcc.gov/file/7520940954.pdf>, pp. 32-36.

AFFIDAVIT OF DAFNA TACHOVER IN SUPPORT OF STANDING

had heard something about it. Six months before I got sick, my then-husband tried to warn me. We were at home. I was on my cell phone, as usual. He was looking at me and said, “Dafna, maybe you should take a 10 minutes break between calls.” I didn’t answer. I just looked at him, smiled, and thought to myself: “worst case scenario I will get a brain tumor when I’m 70 or 80; everything causes cancer.” Six months later, I was 36, I didn’t get cancer, but I got Radiation Sickness. My ex-husband is very smart. He got his Green Card for “extraordinary abilities in science.” He is fluent in 8 languages. He is now a professor in a top university. At the time I got sick, he was on the editorial board of various scientific journals and was the chief editor on epigenetics for Wiley, the largest scientific publisher. He tried to warn me, and I didn’t even ask him “what is it that you know that I don’t but should?” Well, now I know.

20. Reading the scientific evidence was mind-blowing. It is astounding how a lie that “there is no evidence” can be perpetuated so successfully for so long. Despite the FCC assertions, both the scientific and the human evidence is clear. Thousands of peer-reviewed studies, including US government and military studies and reports, and reports of military personnel’s sickness, have proven the risks and harms beyond any doubt. The injuries are not potential, but widespread and real. Much of this evidence is in the record. And after all, I am the evidence, as well as many of the petitioners and the 274 adults and children whose testimonies are in the record. The scientific truth does not care about the FCC’s assumptions regarding what is ‘safe’ or ‘unsafe.’

21. In 2012, I started my work to protect children from the harms of wireless. I learned that the Israeli Government was installing Wi-Fi in schools. Knowing the evidence, I could not tolerate the thought that my nieces in Israel or other children could become as sick as I had been. I decided to take action. My advocacy efforts exposed widespread sickness among schoolchildren caused by Wi-Fi and/or from nearby cell towers. In 2013, largely as a result of my efforts, Israel became the first country in the world to adopt mandatory guidelines limiting the use of Wi-Fi in schools.⁴ Wi-Fi is now banned up to the age of six.⁶ It is allowed for 3 hours a week for grades 1-2, and 6 hours a week in the 3rd grade. Wi-Fi should be turned off at all other times.

22. In 2016, I founded “We Are The Evidence,”⁵ an advocacy group for the protection of the many adults and children who have been sickened by wireless technology. When I first heard about 5G, in 2016, and understanding technology, I quickly grasped the vast, devastating implications that flow from the planned, ongoing 5G deployment. It is exponentially increasing the radiation levels throughout the environment and adds more complex bio-active modulations. Those of us who are already sick, will truly have nowhere to escape and will have no way to survive, and many more people will become sick. I personally am already feeling the effects. As a result, I have focused my efforts on the 5G problem. I attended the FCC announcement of the “fast-tracking” of 5G on July 14, 2016. That week I joined with others to start the campaign against 5G.

⁴[https://ecfsapi.fcc.gov/file/10707243848074/4%3A28%3A2016%20InternationalPolicyPrecautionaryActionsonWirelessRadiationApril2016%20\(1\).pdf](https://ecfsapi.fcc.gov/file/10707243848074/4%3A28%3A2016%20InternationalPolicyPrecautionaryActionsonWirelessRadiationApril2016%20(1).pdf) p.6

⁵ <https://weartheevidence.org/>

AFFIDAVIT OF DAFNA TACHOVER IN SUPPORT OF STANDING**The Urgency from the FCC's Rush to Deploy 5G**

23. The existing and various wireless-based services have led to widespread sickness. But the FCC's rush to fast-track 5G has added even greater urgency to our work.

24. Nowadays, everyone is constantly exposed to multiple radiation sources, with many frequencies and many complex bio-active modulations. What the FCC and some physicists call "low intensity" radiation, because there are no thermal effects, *presents* exposure levels up to 10^{18} times more than what humans typically experienced until very recently. Further, these man-made frequencies are pulsed and modulated, and this aggravates bio-effects.⁶ It was crucial that the FCC genuinely and objectively review whether its present guidelines sufficiently protect and provide proper warnings to the public of the harms identified by settled science. But instead, the FCC dismissed the evidence in an effort to fast track the deployment of 5G.

25. 5G is not really about connecting people; it is more about connecting things. This is and will be the infrastructure for the Internet of Things (IoT). The IoT means that every "thing" in our environment will have an attached RFR transmitting antenna and be wirelessly interconnected. The purpose of 5G is not to reduce download speeds but to collect and sell data, including for artificial intelligence purposes. Our environment will be saturated with transmitters and emitters in constant communication. The FCC predicts that 50 billion devices will be interconnected in the next few years. CTIA, (the wireless industry lobby association) estimates that in order to connect, collect and transfer all the data flowing to and from these IoT devices, 800,000 cell towers will be deployed in the next couple years, in addition to the already-existing 300,000 cell towers.

26. Base station antennas are being rapidly deployed on poles or other structures around the country. These transmitters are often installed within just a few feet of people's homes and sometimes they are right outside children's bedroom windows. Constant radiation is invading people's homes and residential streets, parks, workplaces and other places where people and children stay, sleep and gather. Already pervasive radiation is becoming even more intense, and the cumulative effect will once again increase by many multiples. People often go to sleep and wake up to see a new cell tower near their home. CHD has been contacted by desperate families who became sick within days after one of these powerful antennas went up in their front or back yard or on the sidewalk.

27. Tens of thousands of satellites are being launched to allow Wi-Fi coverage for the entire planet. The FCC permitted the deployment of 1,000,000 "Starlink" earth stations, RF/EMF radiating antennas that will serve to connect the user devices with the satellites. There will soon be nowhere that someone who is already sick will be able to go to avoid radiation and to try to get better. Today, July 22nd, 2020, as I am writing this affidavit, I received an email from a woman who has been a "wireless refugee" for years. She just discovered that near the isolated property she recently purchased, and thought would be safe, they are installing "Starlink" antennas. Below is the picture she sent me. She, her husband and her son had long searched for a safe area and thought they had found refuge in Idaho, only to have to relocate again. But where can they go?

⁶ https://ecfsapi.fcc.gov/file/1001669617135/sec15_2012_Evidence_Disruption_Modulation.pdf

AFFIDAVIT OF DAFNA TACHOVER IN SUPPORT OF STANDING

28. There is no doubt in my mind, nor in the minds of hundreds of scientists,⁷ that the sickness that will flow from the entire planet being awash in ubiquitous, multi-source, multi-frequency radiation will be devastating. I see it happening already. Those, like me, who are already injured and those who will get sick in the future will not have any way to survive. Many of our members who have been injured or whose children have been injured are contacting me daily. They do not know where to go to escape this radiation.

29. In my work, I have tried to reach out to the FCC and Telecom and have participated in conferences organized to promote 5G. It has been disturbing. It has become clear that they intend to silence any dissent. For example, in a conference I attended in 2017, when I asked a question about health effects, the FCC Commissioner Mignon Clyburn stood up, aggressively signaled to me with her hand to stop talking and sent a security guard to where I was standing. I tried to get the FCC's disability committee⁸ to address this recognized disability, but despite my efforts and those of others, the FCC "disability" committee has done nothing on this important issue.

30. For the past 4 years, I have been traveling around the country to educate federal, state and local public officials and communities. I've given many dozens of public lectures to awaken communities. I have presented to hundreds of elected officials in an effort to stop state bills seeking to restrict municipal powers to regulate 5G. I have worked to encourage municipalities to adopt protective ordinances. I was invited by municipalities, including Beverly Hills, CA and City Council members of Berkeley, CA to present on the topic. Many municipalities were supportive, but they claimed that "their hands are tied behind their back because of the FCC regulations."

⁷ <https://ecfsapi.fcc.gov/file/1040566847805/Scientist-5G-appeal-2017.pdf>

⁸ <https://www.youtube.com/watch?v=qg0H63GLkU&t=243s>

AFFIDAVIT OF DAFNA TACHOVER IN SUPPORT OF STANDING

31. The FCC has made clear that it has no interest in recognizing the health implications of its wireless push despite all of our efforts.

32. Joining CHD has provided me with a better platform to work towards creating desperately needed change. The motivator behind my work has always been protecting children, and therefore I was grateful when CHD decided to address this issue. Without CHD, the Petitioners would not have been able to submit this case, which is of the utmost important to protect myself, the injured, children, the public at large, and even those who promote this technology, ignorant of its harmful effects.

Standing of Our Members

33. Children's Health Defense has Article III standing to bring and prosecute this case on behalf of its members. The FCC decision under review has directly injured each and every one of our members and/or their children. This simplest and most basic reason is that the FCC's current standards and guidelines contemplate and allow each wireless license-holder to operate RF/EMF transmitters that emit radio and microwave frequency radiation that penetrates our bodies and flows over our real property without our consent and over our objection.

34. But many if not most of us have suffered more. Seven of the Petitioners in this case are members of CHD and all have Article III standing and Hobbs Act standing. These seven were members of CHD before this case was filed. They all participated in the case before the FCC and made known their objections and requests, all of which were denied. They are therefore "aggrieved" for Hobbs Act purposes. For Article III purposes, each has suffered a concrete injury that is actual and imminent, as described in detail in individual affidavits. Their injuries are redressable by the court.

35. Michele Hertz developed Radiation Sickness after a wireless "smart" meter was installed on her home. Petra Broken, an attorney, and her teenage daughter, suffer from Radiation Sickness. When Dr. Ann Lee's son was exposed to Wi-Fi, he felt like his heart was about to explode like a volcano. Paul Stanley, a technology and media teacher, became sick when he was working for the Hawaii education department TV and was exposed to radiation from their antennas. Jennifer Baran and both her sons suffer neurological effects and symptoms caused by wireless radiation. Virginia Farver's son died from a cell-phone radiation-caused brain cancer that was also impacted by exposure from multiple microwave transmitting antennas on a tower adjacent to his office. While this Court's decision cannot bring him back, the FCC's decision inflicts continuous and ongoing harm to her and her remaining family. Dr. Toril Jelter, MD has many patients, including many children, who have developed neurological symptoms from wireless radiation. The FCC's decision greatly complicates her ability to effectively treat and heal her patients, interferes with her Hippocratic oath and materially impacts her medical practice.

36. Five additional CHD members, who are not named petitioners in the case, are submitting affidavits in support of CHD's organizational standing. They have requested that CHD represent their interests. Three of them, Dr. Erica Elliot, MD, Angela Tsiang, and Mary Adkins, participated below and therefore have both Hobbs Act and Article III standing. They describe their individual injuries in their affidavits.

37. Dr. Erica Elliot is a family physician in New Mexico. She has many patients who have developed Radiation Sickness, and she is a victim herself. Both of Angela Tsiang's sons

AFFIDAVIT OF DAFNA TACHOVER IN SUPPORT OF STANDING

developed Radiation Sickness. Her efforts to obtain accommodation for them in their schools faced stiff resistance, and the refusals were premised in large part on the Commission's declaration that all wireless emitters operating within FCC guidelines are "safe" and cannot lead to sickness, so no accommodation is necessary. Mary Adkins and both her sons suffer from Radiation Sickness. The family has experienced incredible hardships and financial costs in its effort to find refuge and accommodation.

38. Two other CHD Members, Hannah McMahon and Ysobel Gallo, did not submit to the record, but their situation, experiences and injuries support the importance of allowing CHD to pursue the case on behalf of its members.

39. Hannah McMahon's two daughters (7 and 4), along with other members of her family, got sick soon after a 5G "small" but highly powerful "cell" antenna was installed a few feet from their home and in direct line with her daughters' bedroom. McMahon's family has tried every possible action to get the cell tower removed, including corresponding with the FCC, but the FCC refused to take action. It claimed the antennas are safe. Interestingly, while the case below was before the Commission, it failed to inform the family that they could participate by submitting comments and requesting relief in the docket.

40. Ysobel Gallo, who is presenting an affidavit to the Court, also did not submit in the FCC record. She is only now 19 and was a minor when the case was before the FCC, so she lacked legal capacity to exercise her legal rights at the time. She became sick by the Wi-Fi and the RFR from wireless devices in her school when she was 16. Since then she has been trying to survive an impossible situation. She has endured severe pain and cognitive problems. She has had to deal with the denial of her situation, including from her own family members (that ultimately changed). She suffered cruel treatment by her school and some of her peers while she was trying to finish school. The FCC's failure to protect the public brought this beautiful, otherwise happy and brilliant young woman to contemplate ending her life. She cannot go to college or get a job as she is being refused accommodations. Her future, especially with the deployment of 5G cell towers on every electric pole and streetlight, looks gloomy. She must try to survive in a world that is making her sick and denies her right to exist. Sadly, I have been in touch with other teenagers who have been through the same experiences.

41. I have been working with each of the petitioners and CHD members who submitted affidavits in this case. I helped when Angela Tsiang, Jennifer Baran and Petra Broken tried to get accommodations from schools for their children. In most places, schools have now heavily invested in wireless and use the FCC's regulations to deny accommodations to children who have become sick. I refer people with symptoms who are looking for RF-aware medical help to Dr. Toril Jelter, Dr. Paul Dart and Dr. Erica Elliot. I referred Hannah McMahon's family to Dr. Jelter. Dr. David Carpenter has joined me in meetings with senior elected officials. Virginia Farver accompanied me to a meeting in Colorado. Dr. Ann Lee and her son joined me in a meeting in California. Dr. Lee also lobbied with me against 5G-related proposed legislation in California. Michele Hertz and I have supported each other to deal with our sickness and in our advocacy efforts on the issue. I made my residence available to Mary Adkins and her sons when she was driven from her own home because of non-consensual radiation emitted from neighbors and smart meters. I tried to arrange a meeting with Mary Adkin's congressional representatives when I was in Washington DC. I have now known Ysobel for almost two years, and I'm grateful

AFFIDAVIT OF DAFNA TACHOVER IN SUPPORT OF STANDING

she is now working with CHD to educate her peers and help children and teenagers that – like her - have been injured from exposure.

42. Being injured myself, I know how torturous the pains are, how scary it is when your brain doesn't work, or you cannot speak because there is a Wi-Fi router nearby. I know how impossible the present is and how hopeless the future looks for the injured. How can anyone dare to say there is no evidence when Ysobel is the evidence, when I and all the other Petitioners before the Court are the evidence? I consider myself a very strong person, and I have been through a lot in life, but this sickness is the only thing that has gotten me close to a breaking point, more than once. The only thing that keeps me going, is children like Ysobel. If I, who knows what they are going through, will not act to help them, who else will stand up for them? What will give them hope? CHD is their voice, defender and hope.

43. The FCC hasn't reviewed its guidelines for 25 years. These false guidelines have been enabling the proliferation of wireless technology, and now 5G, and have been the cause of CHD members' injuries. Our members need to be protected, and the FCC has shown that it has no intention of protecting them. This case is therefore of acute importance to our members, especially to the injured, and the only course of action open to them against the FCC. It alone is the only path toward any chance of a semi-normal future. Actions against government are complex and expensive. The individual CHD members would not have been able to bring this case without CHD's involvement.

CHD Standing

44. Children Health Defense has Article III standing to pursue this matter on its own behalf. While CHD did not participate below, several of our individually-named Petitioners and others now appearing in the caption did participate. They deem us an appropriate and capable representative of their individual interests and asked us to take the case on their behalf.

45. CHD's mission is to end the epidemic of environmental toxin-related sicknesses. Non-thermal pulsed and modulated RFR emitted by wireless based technology is a toxin that has caused sickness among children. It is also an aggravating factor for other underlying conditions. The FCC's decision to retain its old, outdated guidelines has harmed CHD's ability to achieve our mission and our ability to assist our members and the public. These harms go far beyond, and are in addition to, the time and resources dedicated to prosecution of this petition for review.

46. CHD has had to allocate substantial human and financial resources to address and mitigate the societal harms created or maintained by the FCC's decision. CHD has had to divert resources from other projects unrelated to wireless matters. The FCC's decision required and will continue to require that CHD invest additional resources toward advocacy, counseling, referrals, education and other legal actions related to its Wireless Harms Project. CHD has had to increase the amount of work hours of its managerial, professional and other personnel to help maintain and update its website with campaigns, articles and answering a growing number of emails, phone calls and other requests for assistance. The additional workload has required that I hire additional professionals and an assistant that the organization did not budget when I started.

47. The FCC's refusal to meaningfully review and update its guidelines has enabled the continued deployment of 5G and wireless technologies. This causes more people to become sick and imposes more and higher hurdles to those who have already been injured and suffered willful rejection and violation of their individual rights. These people, in turn, are coming to us

AFFIDAVIT OF DAFNA TACHOVER IN SUPPORT OF STANDING

for help in ever-growing numbers. We have more demand for referrals, more demand for information, more demands for participation in events and more request for mitigation advice, more demand for legal action to stop cell towers installation and for support for protective ordinances.

48. Whenever a spate of 5G antennas starts to appear in various areas, we get additional requests for help from local advocacy groups and individuals who themselves or with children or other family members have been injured. We get more desperate calls from people who are already injured and are feeling increasingly worse with the growing levels of radiation. They ask for advice as to where they can go and who can help them. CHD supports our members and the public in efforts to obtain accommodation and to prevent cell towers from being erected in their communities and near their homes.

49. Since the FCC continues to deny any possibility of harms and actively tries to prevent the public from learning the truth, CHD has had to invest increasing amounts of money and resources to educate the public and elected officials about the evidence of harm so the public will be able to make informed decisions and take action to reduce exposure to this harmful radiation and take measures to protect themselves and their families. This is one of the reasons we initiated the EMF Child Ambassador Project.

50. Because of the FCC's decision, children will continue to be ignorant of the harms and be injured. To mitigate this harm, and since children are more likely to listen to their peers, we started the CHD EMF Child Ambassador Project and hired Ysobel Gallo as the project outreach director. The project aims to encourage and support children to get involved and educate their peers about the science and how to reduce exposure. For example, we support children who decide to conduct their science projects on wireless harms. We provide them information and RF meters so they can measure exposure levels. We offer access to experts who can assist them. We publish their work on our social media platforms.

51. A parent's disabling condition always impacts the entire family. This sometimes causes the children to get involved when their parents are injured. For example, one child mother is sick from RF, and her condition forced the family to be on the road in an endless search for a place



AFFIDAVIT OF DAFNA TACHOVER IN SUPPORT OF STANDING

that will be safe for her. Her sickness has tremendously impacted his life. He became an “expert” on RF and we have been supporting his efforts to educate others. However, the situation has had a strong emotional impact on him. The above image is a drawing he made with his mother when he was 10.

52. CHD’s Child Ambassador Project also directly supports children who have already been injured. Children who have been RF-injured are experiencing severe pain and physiological injuries, but they also encounter an abusive system that denies their condition, and even ridicules them or suggests that they suffer from psychological conditions rather than recognizing they are clearly sick from the industrial level Wi-Fi systems or a cell tower that has been forced on them in schools. The modulated RF signals and radiation interfere with their brain activity, nervous systems and impact them down to the cellular level. Their condition is not psychological, but the FCC’s inaction may lead directly or indirectly to psychological problems. Many of these children are forced out of school, into isolation and lose social connections. Our Child Ambassador Project supports and empowers them to speak up about their experience, have a voice and encourages them to take action and work towards change.

53. For example, a few months ago, I was contacted by a woman who has been a CHD member for many years. Her two teenage daughters recently developed Radiation Sickness. Their symptoms were quite severe, and they were forced into isolation. I met with them, explained the science, about shielding and provided them information that will help them explain to others what they are going through. They decided they wanted to advocate and share their experience. They allowed their mother to share their story on Social Media, and it received a lot of likes and shares. Their story helped many parents realize that wireless is the cause of their own children’s symptoms. These girls are now inspired to raise money to help fund RF shielding for families that cannot afford it, and we are working with them on a video to educate children.

54. We support parents of children who have been injured by connecting them with other parents of RF-sickened children. They can then provide mutual support and help each other try to deal with this very complex new reality. We provide referrals to doctors who are familiar with the condition, help educate doctors who are not, and support their efforts to try to get accommodations for their children.

55. Unlike the telecom industry, we don’t have the wealth or ability to employ 463 lobbyists in Congress and even more in state legislatures. We cannot donate millions to elective candidates, so we must work at the basic and grassroots level. But the FCC’s decision that leads to more deployment of wireless has forced us to supplement our internal office and external public-facing network capabilities so that we could intensify our educational, support, and advocacy efforts. To that end, CHD purchased a “Take Action” software platform designed for non-profit organizations to help us create and manage our various Campaigns.

56. Since the Commission insists on pressing forward with even more wireless deployments without trying to improve its emissions regulations we have had to participate in more proceedings. We submitted a filing in Docket 19-71 to oppose an expansion of the Over the Air Receiving Devices (“OTARD”) rule. It would allow installation of wireless antennas on homes to extend wireless service to nearby homes and businesses using equipment operating within “FCC safe” emission limits. We used the ‘Take Action’ platform and 15,090 people joined our filing, including 6,231 who declared that they and/or their children have been injured from wireless radiation. CHD also paid an attorney to prepare and submit the filing.

AFFIDAVIT OF DAFNA TACHOVER IN SUPPORT OF STANDING

57. The FCC's denial of any potential harm in concert with its facilitation of continued 5G proliferation has caused over 1,000 people to email me in the last 5 months seeking help with shielding their homes from unwanted radiation so they can at least somewhat protect their families and children from the ever-increasing levels of unwanted, forced radiation exposure. We can refer people to EMF mitigation specialists. However, hiring an expert can be expensive, so we have planned a webinar to provide people with advice and guidance on things they can do themselves. We recently hired a professional to help facilitate our online educational and support webinars and other grassroots efforts.

58. We are supporting communities all around the country that have decided to oppose approval and placement of 5G cell towers near their homes, schools, parks and places where children spend a lot of time. To support their efforts, we are working with an attorney to develop a sample ordinance that communities can use to maximize the protections, considering all the limitations imposed by the FCC.

59. To address the growing reports by families who have been injured after the installations of "small cell" 5G cell towers near their homes, we paid an attorney for an analysis of the best legal courses of action aside from participation in FCC proceedings that may be open to us to protect the communities and the injured.

60. We would not have to do any of these additional non petition for review activities, or allocate all the attendant resources if the FCC would merely adopt safe standards, or at least acknowledge some people are and will be individually injured from exposure and make sure nothing stands in the way of accommodation for them. All of this is directly caused by and flows directly from the FCC's action under review by this Court.

61. CHD's commitment to this issue provides hope to the many who have been injured. We hope and pray for success so that there can be desperately needed change for Ysobel, Angela's children, Jenn's sons, Petra's daughter, Ann's son, Dr. Jelter's and Dr. Dart's patients, other CHD members, and myself, all of whom have been injured but were entirely ignored by the FCC. We also hope and pray for all the others who have been injured, and for those who are sick and do not yet know that their sickness is caused by wireless radiation because the FCC is actively suppressing any recognition or realistic acknowledgment of the problem.

62. The FCC's decision entirely failed to resolve or even address the problems raised by CHD's members. They have been harmed by rules that do not adequately protect health and safety, and in fact directly allow continuous harm, including to CHD. This harm will continue until the rules are changed to truly protect health and safety and consider the needs of those who are or may become injured by RFR radiation.

63. A decision by this Court remanding the case to the FCC and requiring it to honestly deal with the science and evidence, and more importantly, the present and growing individual and collective impact on the people being made sick would provide meaningful relief. It would give some small hope to all those who suffer every day and who so far have no realistic chance of recovery or any kind of normal life. It would validate their condition, and its cause, and remove the stigma flowing from the FCC's – and others' – wrongheaded insistence that their condition is psychological or imaginary. It will tell them that, indeed, there is and will always be a place for them in society. It may well prevent scores of suicides.

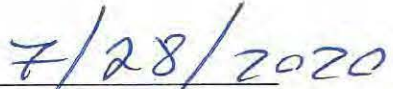
AFFIDAVIT OF DAFNA TACHOVER IN SUPPORT OF STANDING

CHD members and CHD have each and all suffered concrete and particularized injuries traceable to the FCC's decision. These injuries are redressable by the court, thereby meeting Hobbs Act and Article III standing requirements.

I hereby swear or affirm, under penalty of perjury, that to the best of my knowledge and belief, the above averments are true. I acknowledge that this affidavit will be submitted as evidence in a court of law and that false statements may result in legal penalties.



DAFNA TACHOVER



Date

Affidavit of Dr. Paul Dart, MD in Support of Standing

**UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

Children's Health Defense, Michele Hertz,)	
Petra Brokken, Dr. David O. Carpenter, Dr.)	
Paul Dart, Dr. Toril H. Jelter, Dr. Ann Lee,)	
Virginia Farver, Jennifer Baran, Paul Stanley,	)	Case No: 20-1138
M.Ed.)	
Petitioners	)	Petition for Review of Order by the Federal
	)	Communications Commission
v.)	
	)	(FCC 19-126)
Federal Communications Commission and)	
United States of America,	)	(Consolidated with Case No. 20-1025)
Respondents)	

AFFIDAVIT OF PAUL DART MD IN SUPPORT OF STANDING

1. My name is Dr. Paul Dart. My address is [REDACTED] Eugene, Oregon 97405. I am one of the named Petitioners in the above captioned proceeding.
2. I filed comments at the FCC in the proceedings below on February 5, 2013¹ and on September 2, 2013² and asked them to change their rules to address the concerns I raised regarding the public's exposure to wireless radiation at levels allowed by the FCC's guidelines.
3. Specifically, I submitted extensive reliable evidence and cited to a large body of literature indicating that *"there is significant cause for concern regarding the growing impacts of these exposures on the public. Research documenting their adverse biologic and health effects is robust now. The implications of this research cannot be discounted, and must not be ignored."* I suggested that *"[i]t would be indefensible at this time for the FCC to take any actions that may increase exposure of the population to EMR [Electromagnetic Radiation] from cell phones, base stations, Wi-Fi, Smart Meters and other emitting devices. The current levels of exposure need to be reduced rather than increased further. The FCC must especially protect vulnerable groups in the population including children and teenagers, pregnant women, men of reproductive age, individuals with compromised immune systems, seniors, and workers."*
4. The Commission entirely ignored the evidence I submitted and chose to retain its current limits and defective approach. I therefore decided to become a petitioner in Children's Health Defense's challenge to the decision.
5. The purpose of this Affidavit is to provide evidence of my standing to pursue the matter. I will provide some of the basic facts particular to my individual circumstances and will provide information about my patients and the impact of the FCC's decision to retain its current standards and guidelines has on my patients and my practice. This information will show that I (along with my patients), have suffered the injuries-in-fact traceable to the FCC Order that could

¹ <https://ecfsapi.fcc.gov/file/7520940903.pdf>.

² <https://www.fcc.gov/ecfs/filing/6017465430>.

be redressed by an order from this Court holding unlawful, vacating, enjoining, and/or setting aside the FCC Order and remanding the matter to the FCC for further consideration and action.

6. I am a medical doctor in private practice in Eugene, Oregon. I received my bachelor's degree in psychology from the University of California at Santa Cruz, and my medical degree from the Mayo Clinic. I started my private practice of Environmental Medicine in 1986. Environmental doctors focus on recognizing, treating and preventing illnesses caused by exposure to environmental triggers and toxins. Electromagnetic radiation ("EMR") from Radio Frequencies ("RF") and Microwave-based technologies is a type of environmental toxin. It is invisible, it emits no smell and people love the conveniences it enables, but it is extremely harmful. Growing number of individuals can hear it and feel it but based on the scientific evidence, likely, we all are adversely affected in various ways.

7. During the first 15 years of my clinic, I saw a total of perhaps two or three patients who complained of reactivity to electromagnetic exposures, which they were able to manage with avoidance for the most part. But starting in the early 2000's, patients with these complaints started presenting in my office more frequently, and as the roll-out of the cellular infrastructure and in-building networks continued, these patients' problems became more severe and they began to have a much more difficult time avoiding and reducing exposure.

8. At that time, many environmental physicians (including myself) referred to this problem as "Electromagnetic Hypersensitivity Syndrome" or "EHS," but "Microwave Sickness," is a more precise and accurate term for this health problem for several reasons.

9. First, because historically this terminology was the first used in the research literature to discuss illness caused by exposure to microwave frequencies-based technologies, such as radars.

10. Second, because although people who developed this sickness do react to a wide variety of electromagnetic exposures, it is the huge increase in pulsed microwave based technologies (which also utilize pulsation and modulations) that is producing this illness in a significantly larger proportion of the population.

11. Third, this sickness is not a hypersensitivity or an allergic reaction, like peanut allergy for example, where some people have the capability to react in this way and others do not. Human physiology has a bioelectric aspect, and this is especially true of the heart, brain, nervous system, and the membranes that surround our cells and control intracellular and intercellular communication. Pulsed and modulated electromagnetic RF and microwaves-based technologies directly affect this physiology. These are biological effects, not thermal effects. With enough exposure any human being can be made sick from these biological effects of exposure to non-thermal levels of pulsed and modulated microwave RF.

12. Humans vary in their physiology and in their resilience to stressors, and with a given level of adverse exposure, some people get sick sooner than others do. Some people's physiology will decompensate or lose the ability to adapt at a lower level of exposure to a noxious or toxic influence, when others have not yet done so. As the intensity of such exposure increases, more people will decompensate.

13. In the last 20 years the level of exposure of the public to pulsed microwave radiation has increased by several orders of magnitude. The prevalence of microwave sickness also appears to have increased during this interval.

14. In 2012, our local electric utility started testing smart meters, with initial plans to install a “mesh” network of meters on every house in the city—meters that would transmit multiple times a minute, 24 hours a day.³ I knew that if such a network was installed, the city would become unlivable for some of my patients with microwave sickness. Out of concern for these patients, I started to have discussions with the engineers and the board of directors at the utility. Their response to my initial concerns was that these transmissions were within the FCC’s “safety” guidelines, so there could not be a problem.

15. The problem, of course was that the FCC 1996’s guidelines only addressed the thermal effects of microwave RF and made no attempt to address its possible biological effects. As an interested physician, I was aware that a great deal of research on microwave RF’s biological effects had been done since the mid-1990’s. I’d been listening to environmental physicians talk about these problems for at least a decade. I had avoided studying the subject in more detail partly because I was scared to really get a clearer picture of how serious this problem was becoming in our world.

16. The engineers at the electric utility had neither the time nor the expertise to evaluate the medical significance of this research, or to recognize the clinical significance of the technologies they were thinking about using. So I formed a medical advisory group, and spent the next two years performing an extensive review of the existing research on the biological (non-thermal) effects of microwave radio frequency transmissions, writing up a thorough summary of that review, vetting this product with the other members of the group, and communicating the results of all this to the electric utility’s engineers and board of directors. This research review⁴ was the core of the testimony that I presented to the FCC on September 2, 2013⁵, titled *“Biological and Health Effects of Microwave Radio Frequency Transmissions, A Review of the Research Literature”* (“my research review”).

17. The huge increase in environmental exposures to microwave RF and the ensuing increase in clinical pathology is a difficult problem to deal with as part of my environmental medicine practice. The gold standard for treating environmental problems is to adequately reduce levels of exposure. But this is becoming increasingly difficult even in rural environments. As urban cellular and coverage has expanded, many of my patients have become basically excluded from the public space. The level of exposure to microwave RF in our urban areas is several orders of magnitude higher than it was in the year 2000. The ubiquity of wireless communications in the

³ Advanced metering infrastructure supports bidirectional connectivity between “client” smart meters and the utility’s “head-end” server. There is a wide-area “Tier 3” network that supports a group of smart meters that “mesh,” or communicate through each other and ultimately provide a connection point on a “Tier 2” field area network that provides backhaul to a “Tier 1” Internet Protocol “core” facilitates intercommunication with the utility’s head-end. The advanced metering infrastructure supports centralized meter reading, remote service connect/disconnect, prepay services, demand-response, time-of-use pricing, power quality monitoring, outage management and other features/functions. But it all requires a host of RF emitters located on each home or business.

⁴ Filed in the docket below at <https://ecfsapi.fcc.gov/file/7520940903.pdf>.

⁵ Filed at the docket below at: <https://www.fcc.gov/ecfs/filing/6017465430>.

workplace means that from a practical point of view some patients are disabled from working in almost any modern setting.

18. Here are some examples of patients who are suffering as a result of these elevated levels of exposure that are nonetheless within the FCC's "safe" limits.

Case 1:

A previously healthy 9 year old girl developed fatigue, nausea, racing heartbeat, pressure in chest, shortness of breath, acid reflux, a band of heat around the back of her head, tremors, visual disturbances, facial rash, reduced appetite, anxiety, depression, and obsessive thoughts, four months after a router was placed directly over her head in her grade school classroom. After three months of struggling with these symptoms, the family made the connection with EMF exposure, and reduced exposures in the home environment, eliminated her iPad and her smart phone, and discontinued use of the hybrid electric car. With these reductions in exposure over the summer, her symptoms improved, and by early September she was almost symptom-free, with normal energy and good mood.

About two weeks after she returned to school that next fall, her classmates started using computers with Wi-Fi for the first time, and she developed shortness of breath, tension in her chest, and nausea. Her mother reduced her time in the classroom to half time, home schooling her for the other half of the day, and the teacher avoided using the computers when she was there during the afternoon. But the school refused to turn off the Wi-Fi router. Symptom of nausea and sleep disturbance continued for two more weeks. Her mother removed her to a private grade school that had eliminated Wi-Fi from school. As the school became more aware of her situation, they also reduced her exposure to cell phones in the classroom.

Her symptoms moderated after that, to a great extent. She did well in the classroom, but symptoms would flare with exposure to a lot of active cell phone activity (at school assemblies, or out on the town). She would recover from an exposure overnight. When she wasn't in one of these reactions, she was a happy, healthy girl.

In 2019 she matriculated into the ninth grade and tried to attend her local public high school (which has roughly 60 active Wi-Fi routers in operation in the building). She could not tolerate being in her classroom for any significant length of time, developing nausea, vertigo, light-headedness, indigestion, loose stools, some increased inflammation in her joints, and tightness in the head. She had to spend most of her day studying outside the classroom environment.

Although it was clear that her absence from classroom was not working academically, the school refused to accommodate for her problem by removing the Wi-Fi router from her classroom. After the fall term ended, she withdrew from the school. She is trying to attend a class or two at the junior college, but her parents have not been able to arrange for an academic setting with her age peers.

Case 2:

A vital and highly intelligent 17 year old girl developed irregular heartbeat, chest tension/cramping, shortness of breath, tension/restlessness, and episodes of fatigue, headache, vertigo, and loss of mental focus, starting in the autumn of the year after

returning to a private school that had just installed wireless routers in a room close to her classroom. She improved over the summer, but symptoms returned episodically at school during the next year, varying some with her proximity to or distance from the routers in the school. With treatment, she managed to make it through her senior year. She has not continued to college, as exposures would be ubiquitous in the typical college environment. However, they are equally common in the public work environment. Right now, she is marking time, working some in her family's business, and not sure what to do next.

Case 3:

A 57-year-old ceramic artist started developed chronic symptoms of headache, tachycardia, intermittent chest pains, intermittent vertigo, tinnitus, fatigue, and memory problems, starting in the year after a microwave RF transmitting gas company smart meter was placed at her residence in 2007. Symptoms flared most significantly when she was sitting on her sofa, directly on the other side of the wall from this meter.

In June of 2011 this 40 milliwatt meter was replaced with a more powerful 100 milliwatt meter, and over the next two or three months she developed increased irritability, poor appetite, balance problems, more constant tinnitus, burning symptoms in her face, intermittent insomnia, constant mental foggiess, chest tightness and chest pain, dysesthesia in her legs, visual disturbances, and head tension/pain.

That October she had the gas company pull the meter (shutting off the gas supply to her house) and her symptoms improved rapidly. By late November she was feeling relatively normal. But she needed the gas to run her kiln, and so she had the meter placed on the house again at the end of December. Symptoms rapidly returned, and she was forced to have the meter removed again in mid-January. Symptoms moderated somewhat in her home environment.

But her reactivity to other sources of RF continued to be higher after that, triggering symptoms with proximity to cell towers and to other exposures. Sleep continued to be more difficult for her. She has reduced exposures in her home environment significantly, but 13 years after the initial exposure to the microwave RF smart meter, she continues to have symptoms of microwave sickness when she is exposed to microwave RF.

Case 4:

A 51 year old teacher at the local junior college developed gradually increasing problems during the two years after she started working in a cubicle fifteen feet away from a wireless router, which further increased in severity after installation of a wireless router in her home (replacing the prior ethernet connection). Symptoms included pressure in the crown of her head and forehead, intense buzzing tinnitus in her ears, tightness in the solar plexus, heart palpitations, anxiety, insomnia, hypersensitivity to sound, and impaired memory and concentration. She removed the Wi-Fi router from her home environment, but symptoms remained severe, moderating some with vacations and increasing when she was back in the office environment. These disabling symptoms forced her to take medical leave from her office, and she finally lost her job. She had to hire a lawyer to get disability, and finally had to sell her home to pay her expenses. She

continues to have great difficulty with reactivity when she's in neighborhoods close to cell tower transmission, or when she's exposed to Wi-Fi or cell phones in public environments. Finding tolerable housing has been extremely difficult. She is functionally disabled from any work in a modern office setting.

Case 5:

A 64 year old graphic designer developed bursitis (that didn't respond to cortisone), sores in her nose, increased inhalant allergies with sneezing, gummy ear eustachian tubes, clogged sinuses, right knee joint pain, deep aching in her thumbs, deep itching skin, depression (severe), insomnia, frequent headaches (a new problem for her), palpitations, and some other symptoms, all starting a few months after putting Wi-Fi in her home.

When she realized the possible connection, she turned off the iPad and the Wi-Fi router that day, and within a day her thumbs were better, followed as time went by the reduction in the gummy ear, joint pains and bursitis and heart palpitations.

She took further measures to reduce her exposures to EMF in her home and in her workplace, and her symptoms continued to improve. Sleeping under a shielding canopy significantly improved her sleep. She still had chest/heart symptoms when out in public environments with more exposure to Wi-Fi and active cell phone use.

19. In a quick once over of my files I find around 20 cases of patients who are severely impacted to a disabling level by nonconsensual exposures within FCC "safe" limits. One patient chose to end her life because she simply could not find a place to live that sufficiently reduced her exposure and severe reactivity. I'm working part time now, and don't see as many new patients, but I always have several patients on my waiting list whose chief complaint is reactivity to nonconsensual microwave exposures.

20. An equal or greater number of my patients have presented with problems which were not disabling and which they did not correlate with microwave exposures—problems that improved with reduction of exposure to microwave RF in their home environment.

21. It is completely inaccurate to suggest that Microwave Sickness is a controversial condition or a condition which is only found in rare individuals with a special hypersensitivity. With sufficient levels of exposure, pulsed microwave signals and radiation can cause a great many human beings to experience one or more of the symptoms included in the diagnosis of "microwave sickness"—in the absence of any specific or conscious awareness on their part of the presence of the exposure. This has been documented in numerous research articles published over the last half century, starting with articles published by Russian researchers in the 1950's.

22. In my research review that I submitted to the docket I provide 82 references from the extensive research which exists in the scientific literature on Electromagnetic Hyper Sensitivity (Microwave Sickness).⁶ I also provided further information in an accompanying document titled *RF and Electrohypersensitivity*.⁷

⁶ See pdf pages 21-34 (native document pages 9-22). Filed in the record below at: <https://ecfsapi.fcc.gov/file/7520940903.pdf>.

⁷ Filed at the record below at <https://ecfsapi.fcc.gov/file/7520940904.pdf>.

23. There are those who argue against the existence of this condition, citing the results of subjective provocation studies claiming that individuals with “self-identified” microwave sickness are unable to distinguish the presence or absence of an exacerbating RF transmission. The studies in question have multiple design weaknesses that should have rendered them invalid. Most of them do not control for the “nocebo effect” a prerequisite to the validity any provocation study. They incorrectly assume people are a switch on/off, and ignore the individual reactions. Some studies do not control for baseline RF exposure levels in the study environment, do not allow for a wash-out period sufficient to clear symptoms before the challenges which will be adjusted to the individual, and do not consider the possibility of delayed or prolonged reactions to an acute exposure. I discuss this issue in some detail in my 2013 testimony.⁸

24. Furthermore, many of these studies suffer from bias and a clear conflict of interests by being funded by the Telecom industry. Those studies that have been conducted by independent scientists with adherence to scientific principles and an understanding of the manifestation of the condition showed that some people who developed the condition can even detect the signal.

25. From a clinical point of view, the greater weakness of the reliance on subjective perception provocation studies to deny the existence of the condition is that it is simply nonsensical. We do not use subjective perception provocation studies to diagnose any condition and definitely not to deny its existence. We don't deny the existence of gastroenteritis because the patient doesn't know which part of which meal contained the pathogen. Why would anyone argue that the ability to be a human RF meter is a prerequisite for having symptoms provoked by pulsed microwave RF? It simply isn't logical to make such an argument, and it flies in the face of the large quantity of research showing a relationship between RF exposure levels and the presence of these symptoms in populations who are oblivious to that association or to the nature of that exposure.

26. Another in-depth discussion of the flaws of the provocation studies can be found in a peer-reviewed scientific paper by Professor Beatrice Golomb, MD PhD, from UC San Diego School of Medicine.⁹ Dr. Golomb's paper, provides a detailed analysis showing that the alleged “mystery sickness” of the US diplomats in Cuba is in fact Microwave Sickness. Her paper thoroughly explains the science, why the cause of the symptoms cannot be explained by anything except exposure to pulsed non-thermal levels of Microwave based technologies/weapons. In her paper she also provides a thorough review of the science, and the physiological mechanisms of the various symptoms. She concludes: *“Reported facts appear consistent with RF/MW as the source of injury in Cuba diplomats. Non-diplomats citing symptoms from RF/MW, often with an inciting pulsed-RF/MW exposure, report compatible health conditions. Under the RF/MW hypothesis, lessons learned for diplomats and for RF/MW-affected “civilians” may each aid the other.”*

⁸ See my research review that I submitted to the docket, pdf pages 25-27 (native document pages 13–15). Filed at the record below at <https://ecfsapi.fcc.gov/file/7520940903.pdf>.

⁹ Golomb B. Diplomats' mystery illness and pulsed radiofrequency/microwave radiation. Neural Comput. 2018 Sep 5. P. 2927–2929. Filed in the docket below at <https://www.fcc.gov/ecfs/filing/1091330786203>, <https://ecfsapi.fcc.gov/file/1091330786203/Wireless%20radiation%20and%20EMF%20abstracts%20August%202016%20-%20August%202019%20Joel%20Moskowitz%209-13-2019.pdf>.

27. The FCC failed to address biological effects in their exposure guidelines for our citizens. They are therefore responsible for the sickness that many patients are experiencing. The exposure guidelines are supposed to protect our citizens from harm, and they are not doing so. The FCC's failure to acknowledge or address these adverse biological effects of microwave exposure is the major cause of the extreme difficulty that patients have in attaining any accommodation, redress or support for their disabling illness. None of them consented to being irradiated, but they cannot escape it.

28. Many other patients in my practice, who do not present with a wide variety of symptoms, report that they sleep better when they reduce their exposure to their home environments by turning off the Wi-Fi at night and putting their phones on airplane mode. This makes sense, because the research literature shows that RF exposure can reduce melatonin levels in animals and in human beings. I document this research in my research review that I submitted to the docket, citing 26 references from the scientific literature,¹⁰ and in the accompanying document titled *RF and Hormones*.¹¹

29. Melatonin secretion is an important factor in a healthy sleep cycle. Sleep disturbance is an epidemic problem in our country today and millions of dollars are being spent on drugs to help people sleep. The FCC's failure to acknowledge this biological effect of microwave RF exposure is responsible in part for perpetuation of this public health problem.

30. I document the extensive research documenting the relationship between microwave RF exposure, DNA damage, cancer, and infertility in of the research review I gave to the FCC as part of my testimony, citing 112 references from the scientific literature.¹² Further information is provided in separate documents titled *RF and DNA Damage*,¹³ *RF and Cancer*,¹⁴ and *RF and Infertility*.¹⁵ And *RF and Brain Tumors*.¹⁶

31. The research literature clearly shows that long term cell phone use increases brain tumor risk. This is even true of the industry-funded research that is quoted in the newspapers as saying that there is no clear association between the two. The statements by defenders of current guidelines are no different than those by the tobacco industry that there is no evidence that cigarettes cause cancer. I document this cell phone research in the research review I gave to the

¹⁰ See my research review, pdf pages. 35-41 (native document pages 23-29). Filed in the record below at <https://ecfsapi.fcc.gov/file/7520940903.pdf>.

¹¹ Filed in the record below at <https://ecfsapi.fcc.gov/file/7520940905.pdf>.

¹² See my research review that I submitted to the docket, pdf pages 43-67 (native document pages 31-55). Filed in the record below at <https://ecfsapi.fcc.gov/file/7520940903.pdf>.

¹³ Filed in the record below at: <https://ecfsapi.fcc.gov/file/7520940906.pdf>.

¹⁴ Filed in the record below at: <https://ecfsapi.fcc.gov/file/7520940908.pdf>.

¹⁵ Filed in the record below at <https://ecfsapi.fcc.gov/file/7520940909.pdf>.

¹⁶ Filed in the record below at <https://ecfsapi.fcc.gov/file/7520940911.pdf>

FCC as part of my testimony, citing 38 references from the scientific literature.¹⁷ I also provided further information in an accompanying document titled *RF and Brain Tumors*.¹⁸

32. The status quo of these problems is that they are not being acknowledged and they are continually getting worse. The FCC guidelines are the anchor pin of the status quo.

33. The FCC guidelines are quoted all the time by those who do not want to acknowledge or deal with the problem. As the current FCC guidelines do not recognize the adverse biological effects of microwave RF, they help maintain the public's general ignorance of the significance of these problems. And this is producing a great deal of harm to the health of the public.

34. The FCC decision refused to acknowledge the existence of the scientific research on adverse biological effects. It allows exposure guidelines to remain in effect. The FCC has chosen to avoid any effort to protect the public from these biological effects. In so doing, the FCC assumes a burden of responsibility for the significant and growing harm that these adverse biological effects that microwave based technologies are causing to the public health, the public welfare and the public purse.

35. Congress gave the FCC responsibility to protect the public from these hazards. Because the FCC's 1996 guidelines do not protect the public from the biological effects of microwave RF, I consider the FCC's continued use of these guidelines to be directly responsible for the harm that these microwave exposures are causing to the public at large and to my patients.

36. When the FCC declined to make changes that would tighten the current exposure standards, it stated that the received testimonies "*fail to provide any specific, pragmatic recommendation for how our RF exposure limits could be adjusted as a result of [the research presented in testimony]*." If it is indeed rational to reduce these limits, complaining that the testimonies didn't provide the answer to this question is tantamount to complaining that the providers of testimony didn't do the FCC's job for them—as if there was no way that the agency could figure out how to work out this problem.

37. At a further point in their decision the FCC states that "*the Commission recognizes that it is not a health and safety agency*." Essentially, the Commission is implying here that they don't want to do this job, because they don't know how to do this job.

38. Whether or not that implication is an accurate reading of the Commission's motivations here, my testimony of 9/1/2013 actually did make a specific proposal for how the FCC could approach this question:

"The FCC should request that the EPA impanel a Working Group composed of health experts who have no conflicts of interest with industry to review the scientific literature on EMR. The Group should recommend biologically-based EMR standards that ensure adequate protection for the general public and occupational health based upon the precautionary principle. Finally, the FCC should adopt the standards, testing procedures, and appropriate precautionary warning language recommended by the Working Group."

¹⁷ See my research review that I submitted to the docket, pdf pages 69-77 (native document pages 57-65). Filed in the record below at <https://ecfsapi.fcc.gov/file/7520940903.pdf>.

¹⁸ Filed in the record below at <https://ecfsapi.fcc.gov/file/7520940911.pdf>.

39. The Commission's decision did not mention or respond to this concrete suggestion of how to move forward, and incorrectly stated there were no such suggestions.

40. The Commission offers as a reason for declining to take action that some of the testimony suggested exposure levels "*millions to billions of times more restrictive than FCC limits. No device could reliably transmit any usable level of energy by today's technological standards while meeting those limits.*" Using this argument to suggest that it would be technically impractical for industry to reduce exposure levels in our country is quite disingenuous, given that Russia, Bulgaria, Hungary, Switzerland, China, and Italy all have allowable exposure levels 1/100th of those permitted in the USA. The Russian exposure limits are significant, since their pioneering research on pulsed microwave RF's biological effects during the cold war was decades ahead of research in the western bloc. The Russian government established two acceptable levels of exposure, one for the general public (2 to 10 microwatts/square centimeter) and another higher level for military personnel. Contrast this with the United States which decided to avoid two legal exposure limits and applied the military exposure guidelines of 200 to 1000 microwatts/square centimeter) to the entire population.

41. The Commission then states *that "as noted by the FDA, there is no evidence to support that adverse health effects in humans are caused by exposures at, under, or even in some cases above, the current RF limits."* This is simply not correct. My testimony and testimony/comments by many other participants below presented a great deal of scientific evidence that supports this conclusion. And in the seven years since I presented my testimony, much more scientific evidence in support of this claim has accumulated.

42. The Commission goes on to claim that "*no scientific evidence establishes a causal link between wireless device use and cancer or other illnesses.*" Let's consider that this sentence actually means. When apologists for industry discuss the possibility of biological effects of "non-thermal" pulsed microwave exposures, their arguments go through several stages. In the first stage, they argue that the forces of microwave RF are not strong enough to break molecular bonds in DNA, that the effect of the exposure was proportional to the strength of the exposure, and that therefore there was no possibility of microwave RF causing cancer. This sounds like good physics, but it is bad biology. In biological systems the effect of an exposure is not proportional to the strength of the exposure—it is proportional to the *response of the organism* to that exposure. Biological systems have ways of amplifying the response to certain inputs (a small amount of bee venom, for example) that can cause dramatic effects. Current research suggests that microwave RF can do this by altering voltage-gated calcium channels in a manner that increases free radical production in cells. And free radicals definitely can break molecular bonds, damaging DNA.

43. When epidemiological studies started to show a significant correlation between exposures to microwave RF from cell phones or cell towers and cancer, they shifted position and argued that epidemiology isn't definitive enough and we needed to see animal studies.

44. When multiple forms of animals' studies demonstrated that microwave RF increases free radical production and fragmentation of DNA, they pivoted and claimed that this doesn't prove a causal relationship with cancer.

45. When longer animal studies showed an increased level of cancers in exposed animals, they rationalized that these studies needed to be replicated, and that no mechanism had been discovered that could explain how this happened.

46. Now the animal studies have been replicated in research funded by the federal government, and a proposed mechanism has been supported consistently by multiple studies. So now they arguing that just because the rats got tumors, this doesn't prove that humans will.

47. So what does the statement "no scientific evidence establishes a causal link between wireless device use and cancer or other illnesses" say, and what doesn't it say? This really depends on your definition of the words "establishes," "causal," and "link."

48. The research review that I provided to the FCC with my testimony clearly shows that a significant body of scientific evidence has found microwave RF increases production of free radicals, increases fragmentation of DNA, reduces fertility in insects, birds, and mammals, reduces sperm counts in human males, and is associated in epidemiological studies with a significant increase in microwave sickness symptoms, total cancer deaths in the community, and increased incidence of brain tumors. These symptoms have increased along with long term cell phone use, use of other wireless devices and exposure to the radiation from its infrastructure.

49. One must presume that the FCC would only accept this link as established and causal for human beings when we do the same sort of long term double blind exposure studies in human beings as have been performed in rats: Expose the study group for years to isolated and controlled exposures of microwave RF. Isolate the control group in a similar controlled setting. Sacrifice the subjects at the end of the study and slice them up and look for cancer in various organs.

50. While the FCC is waiting patiently for this impossible and unethical standard of human study and sacrifice to be met, the incidence of related tumors continues to increase in adults and in young children, and the reproductive rate of countries in the world has continued to drop until now in many countries including our own it is below the level of replacement of the existing population.

51. This is not a rational or reasonable way to approach defense of the public health. One can only conclude that the FCC is choosing to act in support of other interests than the interest of the health of the public. Because obviously, if the exposure guidelines were reduced to a level that was supported by the science, and the bio-effects of pulsation and modulation were addressed in the health guidelines, someone would have to spend a lot of money developing safer modulations and rebuilding our telecommunications infrastructure.

52. From my perspective as a physician, the FCC's decision not to revisit the 1996 guidelines is a service to the telecommunications industry, but a betrayal of the public trust, a betrayal of the welfare of the public, and a betrayal of my patients.

53. This decision manifestly compromises my ability to give my patients who developed microwave sickness the treatment they need, since their main need is to reduce their microwave RF exposure to a more biologically tolerable level. The guidelines allow a level of exposure in the community at large that makes it prohibitively expensive for these patients to achieve adequate relief even in a shielded home environment, and impossible to achieve in the public space. The existing FCC exposure limits make it impossible for me to obtain an adequate reasonable accommodation for my patient's disabilities in their school and/or workplace.

54. My frustration with this public health situation is increased by the fact that it isn't really necessary. If the adverse biological effects of this exposure were more widely acknowledged, and the levels of exposure were reduced to a biologically acceptable level by appropriate

regulation, and the effects of pulsation and modulation was addressed, we could still have a modern telecommunications infrastructure, but with much less of an adverse physiological impact on the public. It would just cost money to make the change.

55. Wi-Fi is being installed in schools because it is cheaper and easier to install than hard-wiring a classroom. But classrooms *could* be hard-wired, and this would eliminate a huge and problematic exposure of our schoolchildren to wireless signals that research has shown can increase behavior problems, reduce fertility, and cause a wide range of acute symptoms in many individuals. It would just cost money to make the change. These institutions use the FCC guidelines to justify not spending the money to make such changes.

56. An end to science denial by the FCC, and the creation of exposure level guidelines or regulations that actually reflect the existing science, would be the first step in the direction of reducing the hazard and harm to the public. This is already occurring in some communities in Europe.

57. My work with the electric utility and my testimony to the FCC was motivated primarily by my desire to advocate for my patients, some of whom are severely disabled by this technology. Many of them are not really in a position to speak for themselves. Who will speak for these people? I have therefore had to speak out for the interests of the health of the general public that is largely oblivious to the problem because of the FCC's actions and omissions.

58. I was trained at the Mayo Clinic, where the overriding philosophy is that the welfare of the patient comes first. It is a physician's duty to help patients, and also to help the public health of the community. It is difficult and painful to try to do this when the government institutions that should be overseeing and defending the welfare of the public are not doing their job, and in fact are actively participating in industry efforts to deny and hide the existence of the actual science and block the creation of any regulatory changes that are appropriately guided by this science.

59. I claim standing as a petitioner in this suit on the basis of my extensive presented testimony showing a harm, on the basis of the FCC's scientifically indefensible decision to ignore and fail to confront that testimony in making their decision, on the basis that this decision frustrates my ability to properly treat my patients and relieve their suffering, and on the continued injury-in-fact that the existing guidelines and the FCC's refusal to modify them is causing to my patients, many of whom are too disabled to speak for themselves in this matter.

60. My primary concern is for my patients, including those who have yet to walk in the door but likely will, if the FCC does not change its standards. I appear for them. But I also appear for myself, asserting my own personal interests. I am directly injured by the FCC order. The FCC's standards directly impact my professional practice. My patients' constant nonconsensual exposure to "FCC safe" emissions frustrates my ability to ameliorate and heal my patients' injuries. The only certain cure is ending nonconsensual exposure. My Hippocratic oath¹⁹ requires that I take all necessary steps to "prevent disease whenever I can, for prevention is preferable to cure." The AMA Code of Ethics also demands that I seek changes in legal requirements which

¹⁹ "A Modern Hippocratic Oath" by Dr. Louis Lasagna, Dean, School of Medicine at Tufts University, 1964.

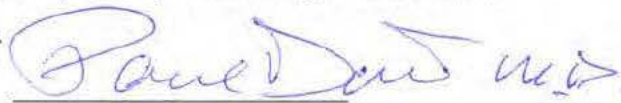
are contrary to the best interests of the patient. Code of Medical Ethics Opinion 8.1 states that "While a physician's role tends to focus on diagnosing and treating illness once it occurs, physicians also have a professional commitment to prevent disease and promote health and well-being for their patients and the community."²⁰

61. Thus, I am clearly and individually injured by the FCC's authorization and encouragement of harmful radiation in several concrete ways, and my professional ethics require that I participate in efforts to solve this health problem. The FCC's failure and refusal to recognize the injuries it is causing me and my patients as part of the order below is a direct driver of further harm.

62. If the Court reverses, vacates and remands the order, the FCC will finally have to craft standards that reduce or eliminate the harm. Changes to the FCC guidelines that would address non-thermal levels and modulated, pulsed signals, will safeguard my life and the lives of my patients. A remand that requires the FCC to address the situation of those who are already suffering and holding that accommodations should be granted to those who are already suffering and need to avoid nonconsensual exposure to wireless radiation, would significantly mitigate the harm.

63. The FCC order did not adequately consider or reasonably respond to my comments or those of others who raised similar issues. Their decision to retain their existing guidelines entirely fails to resolve the problems that my patients face in daily life as a result of constant exposure to harmful radiation, and the problems that I face as a physician in trying to help my patients heal and in trying to relieve their suffering from the disease and disability that they are experiencing as a result of these constant exposures to harmful radiation. My patients' health, and my ability to adequately treat them as a physician, have been harmed by rules that do not adequately protect health and safety, and in fact directly allow continued harm. This harm will continue until the rules are changed to truly protect health and safety and take into account the needs of those who are or may become injured by electromagnetic radiation.

64. This concludes my Affidavit.



Paul Dart MD

SUBSCRIBED AND SWORN TO BEFORE ME this 4th day of May, 2020, to certify which witness my hand and official seal.

[Seal]

Notary Public in and for

OREGON FOR LAKE County

²⁰ Full text available at <https://www.ama-assn.org/delivering-care/ethics/health-promotion-and-preventive-care>.



Affidavit of Virginia Farver in Support of Standing

**UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

Children's Health Defense, Michele Hertz,)
 Petra Brokken, Dr. David O. Carpenter, Dr.)
 Paul Dart, Dr. Toril H. Jelter, Dr. Ann Lee,)
 Virginia Farver, Jennifer Baran, Paul)
 Stanley, M.Ed.)
 Petitioners)

Case No: 20-1138

Petition for Review of Order by the Federal
 Communications Commission
 (FCC 19-126)

v.)

Federal Communications Commission and)
 United States of America,)
 Respondents)

(Consolidated with Case No. 20-1025)

AFFIDAVIT OF VIRGINIA FARVER IN SUPPORT OF STANDING

1. My name is Virginia Farver. My home address is [REDACTED], Fort Collins, Colorado 80526. I am one of the named Petitioners in the above captioned proceeding. I am a member of the Children's Health Defense.
2. The purpose of this Affidavit is to provide evidence of my standing to pursue the matter or the Children's Health Defense's Article III standing to pursue the matter. I will provide some of the basic facts particular to my individual circumstances but also rely on the Affidavits of Dafna Tachover, Dr. Paul Dart, Dr. Toril Jelter and Dr. David Carpenter to explain why the basic facts I present below demonstrate that I have suffered an injury-in-fact traceable to the FCC Order that could be redressed by an order from this Court holding unlawful, vacating, enjoining, and/or setting aside the FCC Order and remanding the matter to the FCC for further consideration and action.
3. I filed comments at the FCC in the proceedings below on two occasions in 2013. I advised them my son had died as a direct result of RF exposure within the FCC's safety guidelines. I asked them to change their rules to protect the population from further harmful exposure. I hoped then, and still hope now, that others will not suffer like my son or lose a family member like I did.
4. I lost my son due to Glioblastoma Multiforme (GBM) brain cancer in 2008. This has been devastating for me and my family. Loss of a child is beyond comprehension for most, and a wound that never heals. I now have only one remaining son, Lee.
5. On March 13, 2008, my son Rich Farver, who was 29 at the time, called me at 9:20PM, whispering and complaining of a severe headache and projectile vomiting. I told him to "get to the hospital." I paced at home until 1:13AM, when we finally received a phone call from the attending emergency room physician, who told us, "Rich had bleeding in the brain." My husband Craig and I caught the first flight out and arrived at Sharp's Memorial Hospital the morning of March 14 at 10AM. Upon arrival, we were informed by neurosurgeon Dr. V.S. Tantuwaya, M.D. from Poway, California that Rich had a brain tumor located in the right frontal lobe of his brain.
6. On March 14th at 5:30PM Rich had brain surgery. Then we waited a week for the pathology report. On March 21, 2008, Dr. Tantuwaya gave us the news that Rich's brain tumor was a Glioblastoma type brain tumor (GBM). This was a very serious and devastating diagnosis. Dr. Tantuwaya advised us that Rich's tumor was caused by "cell phone usage." Rich was right-handed and his tumor was on the right side of his brain, where he

AFFIDAVIT OF VIRGINIA FARVER IN SUPPORT OF STANDING

held his cell phone. While studies show cancer from cell phone use can develop on the opposite side of the head, the risk is higher for the side where the cell phone is used.¹

7. After Rich's diagnosis, Dr. Tantuwaya told the family that Rich needed to be home for therapy. Rich was given a 20% 5-year survival rate. Sitting next to Rich on the flight home was heartbreaking. I would watch tears streaming down his cheeks. He was leaving the place he had made home and the life he'd made for himself in San Diego. Rich wasn't sure if he would ever return. He passed away less than 7 months later.

8. After arriving home to Colorado, we made appointments with Fort Collins oncologist Dr. Richard Marschke. Treatments started immediately. On March 28, Dr. Marschke told the family that Rich's tumor was "not genetic." Whole brain radiation and chemo started right away.

9. At that time, the national news was reporting on Senator Ted Kennedy's brain surgery and treatments at Duke University with a Dr. Friedman. We immediately contacted Dr. Friedman's office and got an appointment for June 9th at the Tisch Brain Tumor Center in North Carolina. The day Rich and I arrived at Duke University; Ted Kennedy was being released from the hospital. We witnessed all of the national news media reporters and cameras waiting outside.

10. Duke University was offering a new experimental treatment called Avastin. Rich would need to be slowly taken off steroids to receive this treatment. I wanted to know if Rich could receive Avastin in Colorado. We were informed that to have this option in Colorado, it would cost \$30,000.00 per month for a year. Our only choice was to get Rich to North Carolina twice a month for a year. I would do anything and go to any expense to make this happen.

11. As we were slowly taking Rich off of steroids, we realized that he was losing his eyesight and balance. Rich ended up at Poudre Valley Hospital in Fort Collins at the beginning of August 2008. We were told that the tumor had advanced and spread. Hospice was called.

12. Rich passed away on October 11, 2008, at home, in my arms. He was 29 years old when he died. I was devastated and no longer wanted to live. To this day, it is very hard.

13. After Rich's death, I decided to research cell phones and electromagnetic radiation (EMR). I decided I could either curl up and die, or I could try to find answers. Rich had always been so healthy at 6'2" and 190 lbs. By 2009, during my intense research, I started looking at cell phone manuals where, in small font, they all said to "keep these devices at least 1 inch away from the head or body or it may exceed FCC guidelines for exposure limits." My responsibility as a parent is to keep my child safe at any age. I felt like a failure.

14. Then I asked myself, how come the FCC allows cell phones knowing that in the way they are actually being used they exceed the FCC guidelines? How come the FCC didn't make sure that every person using a cell phone know that if they use it in close proximity, they may exceed FCC guidelines?

15. I continued reading the science and was shocked to discover, that thousands of studies including US government studies prove the FCC guidelines are obsolete and are not biologically based. I was devastated. But there was more. On August 7, 2009, I found articles online about a "Brain Cancer Cluster" on the San Diego State University (SDSU) campus where Rich had been earning his graduate degree. After reading several

¹ Hardell L, Carlberg M, Söderqvist F, Hansson Mild K. Meta-analysis of long-term mobile phone use and the association with brain tumors. *Int J Oncol.* 32(5):1097-1103, 2008. A meta-analysis paper by Dr. Hardell who is a leading scientist on the connection between cell phones and brain tumors. The scientists concluded: a consistent pattern of an association between mobile phone use and ipsilateral glioma and acoustic neuroma. Submitted below at:

[https://ecfsapi.fcc.gov/file/1092820574235/12a%20%20Cell%20Phone%20Studies%20\(Attachment%2012-%20900%2B%20Studies-%20General%20Opposition%20Statement%20-%20File%2013-0953\).pdf](https://ecfsapi.fcc.gov/file/1092820574235/12a%20%20Cell%20Phone%20Studies%20(Attachment%2012-%20900%2B%20Studies-%20General%20Opposition%20Statement%20-%20File%2013-0953).pdf)

AFFIDAVIT OF VIRGINIA FARVER IN SUPPORT OF STANDING

articles online and reading them over and over, I was floored. A graduate student described in these articles was my son Rich.

16. The articles were in the Daily Aztec, NBC, CBS, ABC, and US News, among others. Four men had died from brain cancer, including my son. They all worked in one building on campus (Nasatir Hall), and in the same room (Room 131). Since the original 2009 articles, other people who worked nearby have passed away as well. Ms. Laurel Amtower was diagnosed with GBM brain cancer in November 2009 and died August 29, 2010. She was forty-four years old. Laurel left behind a 12-year-old daughter. Her office was located in the building next to Nasatir Hall on campus. Dr. Paul Sargent, a professor who also spent considerable time in Nasatir Hall, passed away in 2013 from cancer. There have been other suspected cases as well.

17. I wanted answers from the SDSU administration. I contacted them but got no answers. They were no help. I also contacted the Governor's office, the Occupational Safety and Health Administration (OSHA), the Cancer Registry and other agencies and organizations. All referred me back to SDSU. I drove to San Diego in September 2009, to get answers. I met with two professors off campus, Professor Nancy Speckmann (Rich was her Teaching Assistant) and Professor Farid Abdel-Nour. Both told me that Rich was a special young man.

18. They also told me that they had requested a toxicology study of Nasatir Hall, but the request was denied by the Administration. To this day, I continue to request a toxicology study. Professor Nancy Speckmann, not the SDSU administration, sent me an email forwarded from Ms. Laurel Amtower disclosing her diagnosis in November 2009.

19. In fall 2011 I drove to San Diego again and went to the campus. I walked to Nasatir Hall, Room 131, and found the room closed and used for storage. I noticed that cardboard was lining the windows of Room 131. You could not see into the room from outside at all.

20. In the 2009 articles, the SDSU spokesman Greg Block stated that people had been concerned about a garbage facility and a wireless tower outside of Nasatir Hall Room 131. One article stated that the tower was "installed in 2005." I started researching and found it was part of a fixed wireless network called HPWREN (High Performance Wireless Research & Educational Network). I also found pictures of its installation from 2002. Mr. Block was incorrect that the tower near Room 131 had been installed in 2005. It was in place by 2002 and could transmit electromagnetic waves up to 72 miles so it could reach the San Diego Supercomputer Center and San Clemente Island. The network now relies on several transmitters and bands (900 MHz, 2.4 GHz, 4.9 GHz, 5.3/5.8 GHz, 6 GHz and 11 GHz²) but all of the transmitters are individually licensed or use FCC authorized "unlicensed" frequencies. What this means is the HPWREN emissions – like those from cell provider facilities – were authorized and permitted by the FCC and had to operate within the FCC's emission "safety" guidelines.

21. While he was working in Nasatir Hall, Rich suffered from daily nose bleeds, headaches, nausea, extreme fatigue, underarm sweating, panic attacks, and many other symptoms. One of the most prominent was memory problems. Rich was applying for law school and wasn't sure if he could study and comprehend. Rich told me, "Mom, I cannot seem to remember anything." I knew something was wrong but had no idea what these symptoms were or what they meant. I now know. Reading the science about the adverse effects of radiation from RF and Microwave antennas, there is no doubt in my mind that the HPWREN emissions contributed to my son's brain cancer, probably in combination with his concurrent exposure to cell service-related emissions.

22. Since the death of my son Rich in 2008, I have dedicated myself to this cause. I focused my efforts on preventing harm to children from this deadly toxin. I have been contacting as many people as possible about the effects of wireless radiation on children. For the past twelve years, I have worked every day solely on this issue. I felt that my efforts were the way I would get justice for my son.

² See <http://hpwren.ucsd.edu/Topo/>

AFFIDAVIT OF VIRGINIA FARVER IN SUPPORT OF STANDING

23. Among other activities I have contacted media and participated in the “Take You’re your Power” documentary. I contacted influential groups and have provided information to politicians and doctors. I have contacted principals of schools and many fire districts as well. I have spoken several times in front of my local city council and have attended several meetings and I’ve met with county commissioners.
24. I even met with the Colorado Attorney General. This meeting is how I met Dafna Tachover, now with Children’s Health Defense. Just like me, Dafna has focused her work on the harms to children. Dafna organized this meeting and asked me to join her. Other parents from Colorado whose children have been injured by this radiation and developed Microwave Sickness. One child who developed microwave sickness attended the meeting as well. Dr. David Carpenter who is also a Petitioner in this case attended along with a Professor of Engineering from Colorado who developed Microwave Sickness. We had a long meeting.
25. Throughout the years, I have been contacted by groups of parents from schools with cancer clusters, who suspected that a cell tower located within the school or nearby was the cause of the cancer. I helped investigate six such cancer clusters. Of course, these schools and/or school districts deny the connection to cell tower by claiming that they pose no health hazard as they comply with the FCC standards.
26. I felt some relief and hope when the first results of the National Toxicology Program (NTP) of the National Institute of Environmental of Health Services (NIEHS) study came out in 2016. The study found clear evidence of cancer and DNA damage and the scientists who conducted the study called to warn the public. The NTP is the US premier authority on toxins “whose goal is to safeguard the public by identifying substances in the environment that may affect human health.”³ NTP determinations are considered a golden standard.
27. In 1999, the NTP was nominated by the FDA to conduct the study⁴. The FDA allocated \$25 million for this study. It is the largest study of its kind. NTP published its “Partial Report”⁵ in 2016. Ron Melnik, PhD, Senior Toxicologist and Director of Special Programs in the Environmental Toxicology Program at the National Institute of Environmental Health Sciences (NIEHS) and designer of the study states, “The NTP tested the hypothesis that cell phone radiation could not cause health effects and that hypothesis has now been disproved. The experiment has been done and, after extensive reviews, the consensus is that there was a carcinogenic effect.”⁶

³ Report of Partial Findings from the National Toxicology Program 2 Carcinogenesis Studies of Cell Phone Radiofrequency Radiation in 3 Hsd: Sprague Dawley® SD rats (Whole Body Exposures) 4 Draft 5-19-2016, Submitted below at:

<https://ecfsapi.fcc.gov/file/10709642227609/NTP%20Study%20on%20Rodents%20Draft%20report%20Glioma%20May%202016.pdf>, Page 4.

⁴ Quotes from the nomination letter and link to the letter submitted to the docket below at

<https://ecfsapi.fcc.gov/file/10011773529766/EHTrustNTP.pdf>, page 3.

⁵ Report of Partial Findings from the National Toxicology Program 2 Carcinogenesis Studies of Cell Phone Radiofrequency Radiation in 3 Hsd: Sprague Dawley® SD rats (Whole Body Exposures) 4 Draft 5-19-2016, Submitted below at:

<https://ecfsapi.fcc.gov/file/10709642227609/NTP%20Study%20on%20Rodents%20Draft%20report%20Glioma%20May%202016.pdf>

⁶ Submitted below at <https://www.fcc.gov/ecfs/filing/1001076789440>

AFFIDAVIT OF VIRGINIA FARVER IN SUPPORT OF STANDING

28. The scientists drafting the 2016 partial report: "Given the widespread global usage of mobile communications among users of all ages, even a very small increase in the incidence of disease resulting from exposure to RFR could have broad implications for public health."⁷

29. In February 2018, The NTP Study's cancer results were peer reviewed by a panel of 11 experts. The final report regarding the cancer findings was released in November 2018 and adopted the experts' panel conclusion. The final report determined a "clear evidence" was established. After hearing the positions of industry, the FDA and the public, the panel found the study found "clear evidence," despite the FDA objection. As explained by Dr. Melnick in his paper "in contrast to FDA criticisms, the expert peer-review panel concluded that the NTP studies were well designed, and that the results demonstrated that both GSM- and CDMA-modulated RFR were carcinogenic to the heart (schwannomas) and brain (gliomas)."

30. The American Cancer Society's statement on the significance of this new study was cited: "The NTP report linking radiofrequency radiation (RFR) to two types of cancer marks a paradigm shift in our understanding of radiation and cancer risk. The findings are unexpected; we wouldn't reasonably expect non-ionizing radiation to cause these tumors."⁸

31. Dr. Melnick explained the application of the findings to human health: "The NTP findings are most important because the International Agency for Research on Cancer (IARC) classified RFR as a "possible human carcinogen" based largely on increased risks of gliomas and acoustic neuromas (which are Schwann cell tumors on the acoustic nerve) among long term users of cell phones. The concordance between rats and humans in cell type affected by RFR strengthens the animal-to-human association. This commentary addresses several unfounded criticisms about the design and results of the NTP study that have been promoted to minimize the utility of the experimental data on RFR for assessing human health risks."⁹

32. This study should have been a game changer. I thought that finally the public will be told the truth; that children would henceforth be warned about the potential harms and learn how to practice caution so they would not suffer like my son and die when their death could be avoided and mothers would not have to go through the same devastation of losing a son as I have.

33. But despite the NTP results and scientists' recommendations to warn the public, and despite the expert panel conclusions, including a consideration of FDA criticisms, instead of warning the public, the FDA and the FCC capriciously and arbitrarily dismissed the study and continue to hide the truth from the public.

34. The FCC's rejection of this report is outrageous. It left me feeling very depressed and filled with anxiety. I feel a sense of torture. I wonder what it will take for the FCC to finally take action, to tell the truth to the public so people can protect themselves. When will the FCC provide biologically based safety standards for the public?

⁷ Submitted below at

<https://ecfsapi.fcc.gov/file/10709642227609/NTP%20Study%20on%20Rodents%20Draft%20report%20Glioma%20May%202016.pdf>

⁸ Link to the letter was submitted to the docket below at

<https://ecfsapi.fcc.gov/file/10011773529766/EHTrustNTP.pdf>, page 4.

⁹ Melnick RL, Commentary on the utility of the National Toxicology Program study on cell phone radiofrequency radiation data for assessing human health risks despite unfounded criticisms aimed at minimizing the findings of adverse health effects, *Environ Res.* 2019 Jan;168:1-6. " Submitted below at

<https://ecfsapi.fcc.gov/file/1091330786203/Wireless%20radiation%20and%20EMF%20abstracts%20August%202016%20-%20August%202019%20Joel%20Moskowitz%209-13-2019.pdf>.

AFFIDAVIT OF VIRGINIA FARVER IN SUPPORT OF STANDING

35. Contrary to the absurd denial of the FCC and the FDA, already in 2012, before the NTP results, the Supreme Court of Italy found a “causal link” between mobile phone use and brain tumor risk, acoustic neuroma specifically. Acoustic Neuroma is a Schwannoma type cancer, the type of cancer found by the NTP.

36. The NTP results were confirmed by the Ramazzini Institute study published in 2018¹⁰, a 6 million Euro study. The Ramazzini findings of Schwann cell tumors in rat hearts’ is consistent with the findings by the NTP. Both reported an increase in the incidence of tumors of the brain and heart in rats from exposure to RFR. While the NTP levels of radiation were similar to those emitted by cell phones, the Ramazzini study used levels up to 6,000 times lower, with the purpose of examining the harms of radiation from cell towers.

37. The NTP and the Ramazzini studies’ results, combined with the epidemiological studies, confirm a likely causal link between my son’s death from brain cancer to cell phone use and to exposure to RFR antenna. But despite the clear evidence, the FCC and FDA in their servitude of the industry continue to deny the harm. And while the evidence is become clearer, absurdly, their statements of “no harm” are becoming more acute.

38. I fear for my only two granddaughters that I will ever have. I fear for all the children in this country, that will have nothing but a future of cancers and DNA damage that will be passed on from generation to generation. All of which can be avoided if the FCC would do their job.

39. Based on my continuing research up to the present, the FCC guidelines are woefully inadequate and outdated and do not protect the public from harmful radio frequency radiation. If the FCC guidelines were protective, transmitting antennas would not have been put on university campuses, and my son would not have died. If the FCC guidelines were protective, my son would have known that RF emissions can cause cancer and would have taken measures to reduce his exposure. If the FCC did its job, the FCC testing regulations would have required that phones be tested the way they are being used, without any distance from the head. The FCC would do a better job ensuring that network transmitters do not irradiate people who work or live nearby and constantly expose them to harmful emissions, often without their knowledge or consent. If the FCC does its job now perhaps other mothers will not experience the pain and suffering I face every day. But the public is being told there is no evidence of harm, that these devices are safe. The public is not being warned that if a phone is placed in contact with the body the radiation may exceed even the FCC’s obsolete thermally based guidelines.

40. My family and I have suffered an injury and death as a result of the FCC guidelines. Emissions from cell phones, cell towers and the HPWREN network killed my son. My son is dead because the FCC and other government agencies failed to fulfill their duties under the law, and they are still abandoning their highest obligation to keep the public safe from activities they authorize and regulate. I am full of anxiety and even panic about my remaining son and two little granddaughters.

41. The FCC Order did not adequately consider or reasonably respond to my comments or those of others who raised similar issues. Their complete failure to acknowledge the science or address the pleas by those like me who told their personal story and sought relief was an insult that caused me serious mental anguish. The decision to retain existing rules and in such a dismissive and inconsiderate way, entirely fails to resolve the problems I, my family and my loved ones faced in the past and now face in daily life as a result of constant non-consensual exposure to harmful radiation. I, my family and my loved ones have been harmed by rules that do not adequately protect health and safety, and in fact directly allowed and continue to allow harm. The FCC’s decision below to maintain current exposure guidelines revived my feeling of loss and helplessness; I had to relive the horror of my son’s death and increase all my efforts to cope. This harm will continue until the FCC

¹⁰Falcioni et al (2018), Report of final results regarding brain and heart tumors in Sprague-Dawley rats exposed from prenatal life until natural death to mobile phone radiofrequency field representative of a 1.8 GHz GSM base station environmental emission, Environmental Research. 2018 Mar 7. Submitted below at <https://ecfsapi.fcc.gov/file/1091330786203/Wireless%20radiation%20and%20EMF%20abstracts%20August%202016%20-%20August%202019%20Joel%20Moskowitz%209-13-2019.pdf>, page 288.

AFFIDAVIT OF VIRGINIA FARVER IN SUPPORT OF STANDING

recognizes the problem, stops dismissing the clear evidence and the suffering its guidelines allow, changes its rules to truly protect health and safety and takes into account the needs of those who are or may become injured by electromagnetic radiation.

42. If the FCC amends its guidelines to address the science and the evidence of harm to humans, and adopts standards that reduce or eliminate the harm then my family will be better protected and the chances for further illness and death in my family will be substantially reduced. The FCC must be required to cease its willful participation in and encouragement of the mass non-consensual and harmful poisoning of the public.

43. This concludes my Affidavit, but as noted above I am also relying on the Affidavits of Dafna Tachover, Dr. Paul Dart, Dr. Toril Jelter and Dr. David Carpenter to further explain why the particular facts above demonstrate standing.

Virginia Farver
Virginia Farver

SUBSCRIBED AND SWORN TO BEFORE ME this 5 day of May, 2020, to certify which witness my hand and official seal.

Subscribed and sworn before me in the
State of Colorado, County of Larimer, this
5 day of May, 2020
Expiration Date 01/15/2024
Notary
Signature Susan Maestas

SUSAN MAESTAS
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20164001791
MY COMMISSION EXPIRES 01-15-2024

Affidavit of Dr. Toril Jelter, MD in Support of Standing

**UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

Children's Health Defense, Michele Hertz,)
 Petra Brokken, Dr. David O. Carpenter, Dr.)
 Paul Dart, Dr. Toril H. Jelter, Dr. Ann Lee,)
 Virginia Farver, Jennifer Baran, Paul)
 Stanley, M.Ed.)
 Petitioners)

Case No: 20-70297

v,)

Petition for Review of Order by the Federal
 Communications Commission

Federal Communications Commission and)
 United States of America,)
 Respondents)

AFFIDAVIT OF DR. TORIL H. JELTER IN SUPPORT OF STANDING

1. My name is Dr. Toril H. Jelter. My address is [REDACTED], Walnut Creek, California, 94596. I am one of the named Petitioners in the above captioned proceeding. I am a member of Children's Health Defense.

2. I filed comments at the FCC in the proceedings below on September 4, 2013¹ and on November 18, 2013². As a medical physician I stated that "current research and what I see in my clinical practice indicate a revision of current safety standards is long overdue." I advised the FCC that "Children are suffering disability and disease in much higher numbers than 30 years ago. Their EMF exposure is clearly a significant contributing factor" I reminded them that the FCC is basically "performing large-scale experiments on America's children without informing children or their parents of the risk. Children and their parents have not given their consent, nor have they been given an option to opt out." I concluded by encouraging them to change their rules to address the concerns I raised regarding the public's exposure to RF radiation ("wireless radiation"), at levels allowed by the FCC's guidelines.

3. My FCC testimony provided nine case studies of my patients, set out direct evidence from my experience as a clinician, and referred to reliable scientific evidence, such as the BioInitiative Report, to support my contentions and observations. The Commission entirely ignored the scientific and human evidence and chose to retain its current limits. Therefore, clearly, the FCC decision is not evidence based, it is an abuse of discretion and indicates a complete disregard for the health of the public as well as an abdication of the FCC's duties and a betrayal of the public's trust. As a Physician, I therefore felt compelled to become a petitioner in the Children's Health Defense's challenge to the FCC's decision.

4. The purpose of this Affidavit is to provide evidence of my standing to pursue the matter. I will provide some of the basic facts particular to my individual circumstances. I will provide information about my patients and the impact the FCC's decision to retain its current standards

¹ <https://ecfsapi.fcc.gov/file/7520941431.pdf>.

² <https://ecfsapi.fcc.gov/file/7520958097.pdf>.

AFFIDAVIT OF DR. TORIL H. JELTER IN SUPPORT OF STANDING

and guidelines has on my patients and my practice. This information will show that I (along with my patients) have suffered the injuries-in-fact traceable to the FCC Order that could be redressed by an order from this Court, holding unlawful, vacating, enjoining, and/or setting aside the FCC Order and remanding the matter to the FCC for further consideration and action.

5. I am a California-licensed pediatrician and general practitioner in Walnut Creek, California. I have over 40 years of clinical experience. I was previously licensed in New Jersey and Norway. I am a member of the American Academy of Pediatrics and was trained at the University of Oslo Medical School, in Norway, graduating with honors. I completed my pediatric medical training at the Columbia School of Physicians and Surgeons in Summit, New Jersey. I have worked in a Public Health Mother-Child clinic and with children with cancer and with AIDS. I was on staff at Robert Wood Johnson University Hospital and received a Physician Recognition Award from the American Medical Association. I currently work with Mount Diablo Integrated Wellness Center in Walnut Creek, CA, and recently became a retiree at John Muir Medical Center.

6. My interest in the health effects of radiation began in the 80's after fallout from the Chernobyl nuclear meltdown was carried to Scandinavia where I lived at the time. That was ionizing radiation. Nowadays, my area of expertise has shifted to the adverse health effects of non-ionizing radiation, including from wireless technologies. Non-ionizing radiation in non-thermal levels emitted by pulsed and modulated microwave based technologies, like the radiation emitted by wireless devices and infrastructure, can cause and/or be a contributory factor to myriad detrimental health effects.

7. In the past few years, I have been approached by a growing number of patients, children and adults, who are being adversely affected by exposure to wireless radiation at levels which are within the FCC so called "safe limits." These patients developed radiation sickness (also known as Electromagnetic-Sensitivity or Microwave Sickness) from the radiation emitted by FCC-licensed or approved wireless technology.

8. Microwave Sickness is a spectrum condition. Some patients may be reacting but still functional, while for others it can be quite debilitating and render them unable to live in society. The condition can sometimes produce opposite responses even in the same person. This means that one exposure can cause a high blood pressure response, but another exposure can cause a low blood pressure response³.

9. The US Centers for Medicare and Medicaid and the World Health Organization recognize injuries from ionizing and non-ionizing radiation in a distinct set of International Code of Diseases (ICD) diagnosis codes known as ICD-10. T66 is for Radiation Sickness; W90 recognizes harms from exposure to radio frequencies; and L57 recognizes Skin Changes

³ Golomb B, Diplomats' mystery illness and pulsed radiofrequency/microwave radiation, Neural Comput. 2018 Sep 5. doi: 10.1162/neco_a_01133, available at <https://www.ncbi.nlm.nih.gov/pubmed/30183509>; abstract filed below as part of <https://ecfsapi.fcc.gov/file/1091330786203/Wireless%20radiation%20and%20EMF%20abstracts%20August%202016%20-%20August%202019%20Joel%20Moskowitz%209-13-2019.pdf> on pages 206-207.

AFFIDAVIT OF DR. TORIL H. JELTER IN SUPPORT OF STANDING

due to Chronic Exposure to Non-Ionizing Radiation. One of my teenage patients for example, suffers severe skin reactions from exposure to Wi-Fi. Whenever he is exposed, the skin on his hands begins to crack and bleed.

10. Further, in contrast to the FCC's denial of harms, Microwave/Radiation Sickness from wireless technology has been recognized by US agencies such as The Architectural and Transportation Barriers Compliance Board, known as the "Access Board," which recognized the condition in 2002. Courts in the US and around the world have also acknowledged Microwave/Radiation Sickness as a legitimate medical condition and disability. One such early case is *Yannon v. N.Y. Tel. Co.*, 86 A.D.2d 241, 243, 450 N.Y.S.2d 893, 895 (App. Div. 3rd Dept. 1982) appeal denied 57 N.Y.2d 726, 454 N.Y.S.2d 712, 440 N.E.2d 797 (1982), which accepted the diagnosis and causation from workplace exposure.

11. Various International organizations such as the European Parliament and the Council of Europe and medical associations in the US and around the world have published statements about the increased incidence of illness caused by this technology. There are accepted published guidelines that US doctors employ to diagnose EMF related illnesses. For example, the Austrian Medical Association issued guidelines for the diagnosis and treatment of Electromagnetic Fields (EMFs) related health problems and illnesses (EMF syndrome) in 2011. Doctors around the world use these. These guidelines formed the basis of a more comprehensive version created by the European Academy for Environmental Medicine (EUROPAEM) EMF working group. The "EUROPAEM EMF Guideline 2016 for the prevention, diagnosis and treatment of EMF-related health problems and illnesses"⁴ were peer-reviewed and published in 2016.

12. The diagnosis of Microwave Sickness is a clinical diagnosis. A clinical diagnosis is based on identifying the underlying disease or underlying cause of the patient's complaints based on physical exam and medical history rather than on laboratory examination or medical imaging. Not all ailments have classic signs or blood tests or imaging studies and in lieu of these, a physician must use clinical judgment to draw a reasonable and sensible conclusion. It relies largely on the medical history given by a credible historian. I also try to identify single or double blinded exposure tests in the medical history, to see if symptoms associated with wireless radiation occur after or during an exposure to wireless devices even when the affected patient is unaware of the exposure. I share several examples in my case histories below.

13. I do use some lab tests to search for potential biomarkers that have been established to be associated with exposure to EMFs and Electromagnetic Radiation (EMR) and support the clinical diagnosis such as tests for free radicals that indicate Oxidative Stress damage, a well-recognized mechanism of harm from wireless radiation. To date, I have had about one hundred (100) patients in my clinic who developed Microwave Sickness. About twenty (20) of them are children. Following are a few of the cases I have encountered in my practice. All cases are real patients, minor details have been omitted or changed to ensure privacy.

⁴ Igor Belyaev et al; EUROPAEM EMF Guideline 2016 for the prevention, diagnosis and treatment of EMF-related health problems and illnesses; Rev Environ Health 2016; 31(3): 363–397, submitted below at <https://ecfsapi.fcc.gov/file/10709642227609/Belyaev%20et%20al%202015.pdf>.

AFFIDAVIT OF DR. TORIL H. JELTER IN SUPPORT OF STANDING

- A. Patient One: A four-year-old child with difficulty sleeping and a Pervasive Developmental Disorder (P.D.D.).

A couple brought their 4-year-old son who had sleep difficulties. They informed me that their son's difficulty sleeping had been going on for two years. Every night he joined his parents in their bed because he couldn't sleep and therefore his parents have slept poorly for the past two years as well. At night the son wanted to play, eat, sing and be active instead of sleeping. His parents were exhausted. They gave him a melatonin supplement the evening before they came to see me and thought it might have helped a little bit.

Peer reviewed scientific literature has shown that non-thermal RF radiation from devices operating at FCC-approved levels decreases melatonin production, the sleep hormone in the body. I therefore asked the parents to decrease their son's exposure to radiation from wireless devices by turning off their Wi-Fi router and cell phones and unplugging the cordless phones. I recommended they do this as a clinical trial for two weeks and then tell me if they noticed any difference. Within a few days both the parents and the son were sleeping well at night and the son was able to sleep in his own bed without a melatonin supplement.

The boy also had developmental delay. He had been diagnosed with Pervasive Developmental Disorder (P.D.D.). A few months after he entered Kindergarten his parents were asked to attend a school meeting with all his teachers. The parents were concerned he might have done something wrong and were wondering why the meeting had been requested. A large team was present- about 10 school staff members. The staff told the parents that they had noticed a significant improvement in their son's cognitive abilities, and they wanted to know what the parents were doing to achieve this outcome. The parents informed the school staff that they had decreased exposure to radiation from wireless devices in their home. The school staff were baffled and said they thought he had started on a new medication because his cognitive abilities had improved by 2 years over 2 months.

Later that same year in October, the son started doing poorly at school again and his sleep difficulties returned. His mother thought maybe the cause was too much sugar from Halloween. It turns out that the older sister had turned the Wi-Fi router back on without telling anyone. Once it was turned off again and they installed hard-wired ethernet cable for internet access, the son was once again sleeping well and functioning at grade level in school. This was in fact a double blinded study as the mother and son did not know that the sister had turned the wi-fi router back on.

- B. Patient Two: A five-year-old boy with developmental delay and arm flapping.

A mother came to me regarding her son who was diagnosed with a developmental disorder. One of the more disturbing symptoms was flapping. He would lift his arms up wide and flap them like a bird. The mother came to me because she had doubts about the flapping being part of a developmental delay condition. She informed me that when she took her son to see grandma in rural

AFFIDAVIT OF DR. TORIL H. JELTER IN SUPPORT OF STANDING

Tennessee (an area with no cell phone reception), the flapping gradually stopped over a period of 4 weeks. When they returned to the San Francisco Bay Area, the flapping returned.

Because the FCC is disseminating false information about the safety of non-ionizing radiation in non-thermal levels, this child is mislabeled as having developmental delay and his ability to learn is impaired.

- C. Patient Three: A four-year-old boy with developmental delay whose condition changes dramatically with a change in location.

A mother questioned a diagnosis of developmental delay in her son because his ability to function normally for his age varies dramatically from one location to the other. She and her 4-year-old son live in a San Francisco suburb. He has high pitched screaming day and night. He also repeatedly bangs his head against things. He is unable to play interactively with other children his age. But whenever they visit a relative in rural Oregon, where there is no cell phone reception, he becomes 'normal' within 24 hours. He stops the head banging and high-pitched screaming. He is able to sleep at night and plays appropriately with other children his age.

When this family drives back to the San Francisco Bay Area, the high-pitched screaming starts again when they reach Sacramento. By the time they get to the San Francisco suburb where they live, the head banging has resumed. Wireless radiation at current levels that the FCC says is safe is adversely affecting the brains of children. The BioInitiative Report, lists numerous studies on the effects of pulsed and modulated frequencies and the radiation they emit to the brain, including brains of children. For example, a 1989 study using levels of radiation emitted by current cell phones, showed memory impairment, slowed motor skills and retarded learning in children⁵. The Austrian Medical Association Guidelines emphasize that if symptoms change significantly with time or location you need to consider environmental factor(s) in the differential diagnosis, such as wireless radiation.

- D. Patient Four: An 8-year-old boy with sleep difficulties that vary with location in the home.

A mother reported to me that her 8-year-old son has sleep difficulties in bed but not in the living room. She reads him a bedtime story and when he gets tired, she walks with him to his bedroom and he gets wired and more awake, can't sleep and is anxious. I asked them if there is any exposure to wireless devices and radiation. She said "No." So I asked- even on the outside of his bedroom wall? She went to look and found a wireless electric utility "Smart" Meter installed on the outside of his bedroom wall. After opting out of a smart meter and securing a replacement mechanical analog meter, this child was able to sleep, and his anxiety resolved.

- E. Patient Five: A 10-year-old boy with aggressive behavior and non-verbal Autism.

Parents brought their 10-year-old son to see me. Their primary concern was

⁵ BioInitiative Report Color Chart, filed below at <https://ecfsapi.fcc.gov/file/7022311578.pdf>.

AFFIDAVIT OF DR. TORIL H. JELTER IN SUPPORT OF STANDING

aggressive behavior. He had also been diagnosed with Autism and was non-verbal, i.e., he has never said a word in his life. The parents were particularly concerned because he was getting bigger and more violent, and the mother who served as his primary caretaker was petite. He sometimes throws lamps against the wall and breaks them. His parents feared they would have to institutionalize him. They came seeking some potential medication for his aggression. Since pulsed and modulated wireless based technologies and the radiation they emit can trigger and worsen aggression, I asked them to hold off on medication (which often has side-effects) and instead, do a two week clinical trial by having no or only low exposure to radiation from wireless devices. They were to observe for possible improvements. After merely three days with lower exposure to wireless radiation i.e. of turning off the Wi-Fi router, cell phones and unplugging cordless phones, this ten-year-old boy who had never said a word said a full sentence. His aggressive behavior subsided, and there was no need to institutionalize him. Another benefit was that the mother's seizure disorder decreased in severity and frequency, so she was better able to cope with her son's challenges. There is scientific evidence that pulsed and modulated radio and microwave frequencies and radiation can cause or worsen seizures.

14. I was not surprised when Patient Five's mother obtained relief from her seizure disorder after avoiding wireless radiation. Following the introduction of radars, which just like cell phones, Wi-Fi and other wireless devices, use Microwave frequencies in non-thermal levels, sailors reported symptoms, including seizures. The US Navy decided to investigate and assigned Dr. Zori Glaser to collect studies on the biological effects of Radio and Microwave frequencies. In 1971 the Navy published a report which referenced 2,311 studies showing harms. Pages 7-12 of the report elaborate various adverse health effects established in those studies. Seizures are mentioned on page 8. A 2016 study showed chronic exposure to mobile phone radiation might increase the risk of seizure attacks⁶.

15. There are dozens of studies conclusively and consistently demonstrating a negative impact on the brain from pulsed and modulated RF and Microwave frequencies, including from specific wireless devices, such as cell phones (2G⁷, 3G & 4G⁸). These studies may explain some

⁶ The studies were filed below at

[https://ecfsapi.fcc.gov/file/10930041100048/Effect%20of%20mobile%20phone%20radiation%20and https://www.fcc.gov/ecfs/filing/6017339159](https://ecfsapi.fcc.gov/file/10930041100048/Effect%20of%20mobile%20phone%20radiation%20and%20https://www.fcc.gov/ecfs/filing/6017339159).

⁷ GSM (2G) cell phone exposure affects cortical activity and the spread of neural synchronization in 10 human subjects. Vecchio et al, Mobile phone emission modulates interhemispheric functional coupling of EEG alpha rhythms, Eur J Neurosci. 25(6):1908-1913, 2007, filed below at [https://ecfsapi.fcc.gov/file/1092820574235/12a%20-%20Cell%20Phone%20Studies%20\(Attachment%2012-%20900%2B%20Studies-%20General%20Opposition%20Statement%20-%20File%2013-0953\).pdf](https://ecfsapi.fcc.gov/file/1092820574235/12a%20-%20Cell%20Phone%20Studies%20(Attachment%2012-%20900%2B%20Studies-%20General%20Opposition%20Statement%20-%20File%2013-0953).pdf).

⁸ LTE (4G) EMF exposure modulates the synchronization patterns of EEG activation across the whole brain. Lv B et al, Whole brain EEG synchronization likelihood modulated by long term evolution electromagnetic fields exposure, Conf Proc IEEE Eng Med Biol Soc. 2014:986-989, 2014, filed below at <https://ecfsapi.fcc.gov/file/1092820574235/12a%20->

AFFIDAVIT OF DR. TORIL H. JELTER IN SUPPORT OF STANDING

of the effects I see in my patients. At least 25 such studies were submitted to the docket.

16. These studies are usually conducted using a computer-generated electroencephalogram (EEG) test that detects and measures the electrical activity in the brain. Many of these studies were done on humans and show clear effects, especially on the alpha brain waves. However, other effects were also suggested, for example on memory⁹, cognition¹⁰ and motor functions¹¹ along with whole brain effects. I see all of these effects in some of my patients. These studies show that most of the participants' brain waves, including those of "normal" participants,¹² were affected. The impact was more significant for those with epileptic brain injuries.

17. Clearly, the FCC is using outdated, unscientific and biased studies and standards. There are thousands of peer reviewed independent scientific studies showing that there are many harmful effects from pulsed and modulated non-ionizing frequencies at non-thermal levels. Our children are becoming sick but the FCC absurdly continues to deny there is evidence of harm. This is a large-scale experiment on children without parental consent. In fact, it is not really an

%20Cell%20Phone%20Studies%20(Attachment%2012-%20900%2B%20Studies-%20General%20Opposition%20Statement%20-%20File%2013-0953).pdf

⁹ Cell phones emissions modify the brain responses significantly during a memory task. Krause CM et al, Effects of electromagnetic field emitted by cellular phones on the EEG during a memory task, Neuroreport 11(4):761-764, 2000, filed below at

[https://ecfsapi.fcc.gov/file/1092820574235/12a%20-%20Cell%20Phone%20Studies%20\(Attachment%2012-%20900%2B%20Studies-%20General%20Opposition%20Statement%20-%20File%2013-0953\).pdf](https://ecfsapi.fcc.gov/file/1092820574235/12a%20-%20Cell%20Phone%20Studies%20(Attachment%2012-%20900%2B%20Studies-%20General%20Opposition%20Statement%20-%20File%2013-0953).pdf).

¹⁰ EEG readings of 19 human subjects provide evidence that the EMF emitted by mobile phone affects pre-attentive information processing. Papageorgiou CC et al, Acute mobile phone effects on pre-attentive operation, Neurosci Lett 397(1-2):99-103, 2006, filed below at

[https://ecfsapi.fcc.gov/file/1092820574235/12a%20-%20Cell%20Phone%20Studies%20\(Attachment%2012-%20900%2B%20Studies-%20General%20Opposition%20Statement%20-%20File%2013-0953\).pdf](https://ecfsapi.fcc.gov/file/1092820574235/12a%20-%20Cell%20Phone%20Studies%20(Attachment%2012-%20900%2B%20Studies-%20General%20Opposition%20Statement%20-%20File%2013-0953).pdf)---

¹¹ Exposure to cell phone signal with its pulsation and modulation may affect inter-hemispheric synchronization of the dominant (alpha) EEG rhythms in epileptic patients. If confirmed by future studies on a larger group of epilepsy patients, the modulation of the inter-hemispheric alpha coherence due to the GSM-EMFs could have clinical implications and be related to changes in cognitive-motor function. Vecchio et al, Mobile phone emission increases inter-hemispheric functional coupling of electroencephalographic alpha rhythms in epileptic patients, Int J Psychophysiol, 84(2):164-171, 2012, filed below at

[https://ecfsapi.fcc.gov/file/1092820574235/12a%20-%20Cell%20Phone%20Studies%20\(Attachment%2012-%20900%2B%20Studies-%20General%20Opposition%20Statement%20-%20File%2013-0953\).pdf](https://ecfsapi.fcc.gov/file/1092820574235/12a%20-%20Cell%20Phone%20Studies%20(Attachment%2012-%20900%2B%20Studies-%20General%20Opposition%20Statement%20-%20File%2013-0953).pdf).

¹² The study was conducted on 20 human subjects and showed that pulsed high-frequency electromagnetic fields can affect normal brain functioning. Curcio G et al, Is the brain influenced by a phone call? An EEG study of resting wakefulness, Neurosci Res. 53(3):265-270, 2005, filed below at: [https://ecfsapi.fcc.gov/file/1092820574235/12a%20-%20Cell%20Phone%20Studies%20\(Attachment%2012-%20900%2B%20Studies-%20General%20Opposition%20Statement%20-%20File%2013-0953\).pdf](https://ecfsapi.fcc.gov/file/1092820574235/12a%20-%20Cell%20Phone%20Studies%20(Attachment%2012-%20900%2B%20Studies-%20General%20Opposition%20Statement%20-%20File%2013-0953).pdf).

AFFIDAVIT OF DR. TORIL H. JELTER IN SUPPORT OF STANDING

experiment since science has already shown the consequences and I see the results every day in my clinic.

18. In 2014 the California Medical Association (CMA) passed a Resolution for “Wireless Standards Reevaluation”¹³ that called upon the FCC to implement safety exposure limits “that do not cause human or environmental harm.” The CMA determined that existing public safety limits for wireless devices are “outdated and inadequate to protect public health.” The CMA stated that “many scientists, researchers, public health officials and agencies conclude that wireless electromagnetic frequency (EMF) standards established by the Federal Communications Commission are outdated as they are based only on thermal effects and not on non-thermal effects of non-ionizing EMF microwave radiation.”

19. CMA stated that “peer reviewed research has demonstrated adverse biological effects of wireless EMF including single and double stranded DNA breaks, creation of reactive oxygen species, immune dysfunction, cognitive processing effects, stress protein synthesis in the brain, altered brain development, sleep and memory disturbances, ADHD, abnormal behavior, sperm dysfunction, and brain tumors” and therefore concluded that “the current standards are inadequate to protect public health.”

20. But the FCC outrageously ignores and dismisses all of the extensive body of scientific evidence, expert medical opinions and the clear human evidence that confirms what the science has warned us of and continues to claim that there is no harm except for thermal harm. The FCC uses its obsolete guidelines to enable the wireless industry to force the installation of cell towers and antennas a few feet from children’s bedrooms. The FCC is cruelly ignoring the desperate pleas of children and their parents who have been injured from the FCC’s actions. How long can this abuse of power be allowed to continue?

21. This is why I am petitioning this court and why I have been supporting Dafna Tachover and the Children’s Health Defense work. I am a physician, not an advocate, but the children and their parents need someone to advocate on their behalf and fight for their rights as the FCC and the FDA, not only do not protect the public, but are knowingly causing harm. Some of my patients have been referred to me by Dafna Tachover as she and the Children’s Health Defense are known to be a resource for parents and the injured. In order to support my patients and others who have been injured, I have been supporting their work and efforts, including agreeing to attend meetings and make presentations to educate public officials. I am personally impacted by the FCC’s Order since the FCC guidelines allow third parties to emit harmful radiation that invades my body against my will. It is a form of trespass and a form of battery. As a physician and pediatrician caring for children, I also have ethical and professional obligations. The Hippocratic Oath states: “I will prevent disease whenever I can, for prevention is preferable to cure.” How on earth can I do this without honest and intelligent action on the part of the FCC?

¹³ California Medical Association House of Delegates Resolution 107- 14, Wireless Standards Reevaluation, adopted on Dec 7, 2014, filed below at <https://ecfsapi.fcc.gov/file/1092989731923/30-Attachment%2030-%20California%20Medical%20Association%20Resolution.pdf>.

AFFIDAVIT OF DR. TORIL H. JELTER IN SUPPORT OF STANDING

My hands are tied. The FCC's decision to maintain the status quo undermines my ability to help and protect my patients and is increasingly making it impossible for me to alleviate their suffering.

22. The Hippocratic Oath requires that I keep my patients from harm and injustice. The FCC guidelines, however, impair my ability to care for my patients. The FCC guidelines enable involuntary and non-consensual exposure to ever increasing levels of radiation and likely more complex modulations which perpetuate the sickness of my patients. The FCC guidelines are causing and allowing widespread injustice towards our most vulnerable populations, that is the chronically ill, the elderly, children and the unborn child.

23. If the Court reverses, vacates and remands the order, the FCC will finally have to craft standards that reduce or eliminate the harm. Changes to the FCC guidelines that would address non-thermal levels and modulated, pulsed signals will safeguard my life and the lives of my patients. A remand that requires the FCC to address the situation of those who are already suffering and holding that accommodations should be granted to those who are already suffering and need to avoid nonconsensual exposure to wireless radiation, would significantly mitigate the harm.

24. The FCC order did not adequately consider or reasonably respond to my comments or those of others who raised similar issues. My patients have been harmed by rules that do not adequately protect health and safety, and in fact directly allow continuous harm. The FCC's decision to retain their existing rules entirely fails to resolve the problems my patients face in daily life as a result of constant exposure to harmful radiation and will perpetuate their suffering. These rules are harming me personally and impede my ability to care for my patients and alleviate their suffering. This harm will continue until the rules are changed to truly protect health and safety and take into account the needs of those who are or may become injured by electromagnetic radiation.

25. This concludes my Affidavit.


Toril H. Jelter MD

SUBSCRIBED AND SWORN TO BEFORE ME this th 8 day of June, 2020, to certify which witness my hand and official seal.

[Seal]

Notary Public in and for _____

JURAT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California

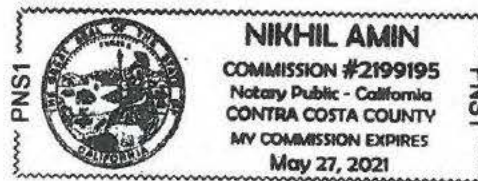
County of CONTRA COSTA

Subscribed and sworn to (or affirmed) before me on this 8 day of JUNE,

2020 by TORIL H. JELTER

proved to me on the basis of satisfactory evidence to be the person(s) who appeared before me.

Nikhil Amin
Signature (Seal)



OPTIONAL INFORMATION

DESCRIPTION OF THE ATTACHED DOCUMENT

Affidavit of Toril
(Title or description of attached document)

H. Jelter
(Title or description of attached document continued)

Number of Pages 10 Document Date 6/8/2020

Additional information

INSTRUCTIONS

The wording of all Jurats completed in California after January 1, 2015 must be in the form as set forth within this Jurat. There are no exceptions. If a Jurat to be completed does not follow this form, the notary must correct the verbiage by using a jurat stamp containing the correct wording or attaching a separate jurat form such as this one which does contain the proper wording. In addition, the notary must require an oath or affirmation from the document signer regarding the truthfulness of the contents of the document. The document must be signed AFTER the oath or affirmation. If the document was previously signed, it must be re-signed in front of the notary public during the jurat process.

- State and county information must be the state and county where the document signer(s) personally appeared before the notary public.
- Date of notarization must be the date the signer(s) personally appeared which must also be the same date the jurat process is completed.
- Print the name(s) of the document signer(s) who personally appear at the time of notarization.
- Signature of the notary public must match the signature on file with the office of the county clerk.
- The notary seal impression must be clear and photographically reproducible. Impression must not cover text or lines. If seal impression smudges, re-seal if a sufficient area permits, otherwise complete a different jurat form.
 - ❖ Additional information is not required but could help to ensure this jurat is not misused or attached to a different document.
 - ❖ Indicate title or type of attached document, number of pages and date.
- Securely attach this document to the signed document with a staple.

Affidavit of Hannah McMahon in Support of Standing

**UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

Children's Health Defense, Michele Hertz,
Petra Brokken, Dr. David O. Carpenter, Dr.
Paul Dart, Dr. Toril H. Jelter, Dr. Ann Lee,
Virginia Farver, Jennifer Baran, Paul
Stanley, M.Ed.
Petitioners

v.

Federal Communications Commission and
United States of America,
Respondents

Case No: 20-1138

Petition for Review of Order by the Federal
Communications Commission
(FCC 19-126)

(Consolidated with Case No. 20-1025)

AFFIDAVIT OF HANNAH MCMAHON IN SUPPORT OF STANDING

1. My name is HANNAH MCMAHON. My home address is [REDACTED], Sacramento, CA 95831. I am a member of Children's Health Defense.
2. The purpose of this Affidavit is to provide evidence of Children's Health Defense's Article III standing to pursue the matter. I will provide some of the basic facts particular to my individual circumstances, but also rely on the presentations contained in the Affidavits submitted by Dafna Tachover, Dr. Paul Dart, Dr. Toril Jelter and Dr. David Carpenter to provide additional analytical and factual support for the proposition that I, my children and the Children's Health Defense have each suffered an injury-in-fact traceable to the FCC Order that could be redressed by an order from this Court holding unlawful, vacating, enjoining, and/or setting aside the FCC Order and remanding the matter to the FCC for further consideration and action. I will also provide some facts relating to how the FCC Order will frustrate Children's Health Defense's organizational mission and require diversion of its resources to combat the conduct that has been authorized or permitted by the FCC order.
3. We have suffered direct injury from wireless radiation and specifically from 5G "small cell" antenna that was deployed by our home.
 - a. In late December 2018, Verizon installed a "small cell" radiating antenna 45 feet from our home, 60 feet from our daughters' bedroom window, and nine feet from our property line. Pictures are attached in Exhibit 1. The first image is from the sidewalk in front of our house. The second is a view from a front window of the house. The antenna has a 360 degree radiation pattern and is emitting microwave radiation into our home 24/7. The antenna was installed without our consent. The only notice we received was a Verizon door hanger on our front doorknob telling us that Verizon was doing work in the area and not to park on the street for a couple days. There was no specific mention of a cell antenna. About a week after seeing this notice, my aunt came to visit and pointed out the device on the light pole outside our home and asked us when that had been installed and suggested that it might be a cell antenna. That was the first time we noticed the

AFFIDAVIT OF HANNAH MCMAHON IN SUPPORT OF STANDING

device. We were not concerned about potential health effects at all at the time, figuring the City would not allow installation of something dangerous so close to our home.

b. In late January 2019, roughly one month after the antenna was installed, our daughters [REDACTED] currently age six (6) and [REDACTED], currently age four (4), began to experience persistent cold/flu symptoms as well as occasional headaches and sleep disturbances. During this time, both children were also much more lethargic compared to their typical energy levels. These symptoms persisted until early April 2019, roughly 1.5 weeks after we installed shielding in the home to block some of the radiation from the antenna (more on shielding in Paragraph 5 below).

c. From February 23rd 2019 to March 2nd 2019, our whole family went to Cabo San Lucas. During this trip both [REDACTED] and [REDACTED] symptoms improved considerably for the first time since late January 2019, when they first began experiencing their health problems. Shortly after returning home, their symptoms began to worsen again. It was at this time that we began to seriously consider that the antenna could be the cause of their health problems. This caused us to research the topic thoroughly. In that process, we found much credible evidence suggesting that the emissions from the antenna could be causing the problems [REDACTED] and [REDACTED] were experiencing, as well as the potential for more serious health problems later down the line. This realization led us to reach out to Verizon, the FCC, our state and federal representatives, and the City of Sacramento, requesting that the antenna be turned off or relocated. This realization also led us to install shielding inside our home in an attempt to block some of the antenna emissions from entering our home.

d. Our analysis of the situation and the available research leads us to believe that the antenna emissions are suppressing the girl's normal immune functions resulting in more frequent infections from common germ exposure, when compared to the infection rate prior to antenna installation.

e. Prior to the antenna installation, both children were in good health with no health issues. Neither child had ever experienced headaches. Neither child had experienced sleep disturbances since they were infants. Neither child had ever experienced diarrhea and neither child had vomited since they were infants; typical baby "spit-up." Prior to the antenna installation each child had only had 3-4 mild colds in their life, each of which only lasted 2-3 days. [REDACTED] started school in August 2018. Her attendance records are attached as Exhibit 2. The first page is for 2018-2019 and the second page is for 2019-2020. A comparison shows that she did not miss any school days due to illness until February 2019, after the antenna was installed. Since the antenna has been installed Abigail has missed 11 days of school due to illness, and has been sick many more days than that.

f. The above health problems are now a regular occurrence. The contrast is stark and the only variable we are able to identify is the antenna. We also believe that the shielding provided temporary relief for the girls but they are now suffering from an "accumulation" effect of the radiation progressively wearing down their immune system.

g. We have had these health problems documented and the problem has been attributed to the antenna outside our home. Dr. Gunnar Heuser's diagnosis letter is attached as Exhibit 3. Dr. Toril Jelter's letter is attached as Exhibit 4. Both physicians

AFFIDAVIT OF HANNAH MCMAHON IN SUPPORT OF STANDING

diagnosed [REDACTED] and [REDACTED] with electromagnetic sensitivity also known as Microwave Sickness. Dr. Jelter also wrote that scientific evidence shows that “frequent excessive and chronic exposure to microwave radiation can adversely affect behavior (meltdowns) and immune function resulting in more frequent and more severe infections.” The total cost for being seen by these doctors was \$1,175. We would not have had to incur this expense but for the need to investigate and document the cause of our injuries.

h. Myself, Hannah McMahon, and my husband, Aaron McMahon, have also experienced health problems that can be either directly or indirectly attributed to the antenna outside our home. Since the antenna was installed we have both experienced increased anxiety. It is difficult to determine whether this is a direct result of the antenna emissions or an indirect result of worrying about the potential long term repercussions of the exposures we are being subjected to inside our home. Even if the antenna was not directly affecting our health, just knowing that there is an abundance of scientific evidence suggesting that the antenna could cause us harm, is enough to cause distress. Further the clear effects on our daughters is a cause of distress.

i. Aaron and I have also experienced frequent sleep disturbances since the antenna was installed. Similar to the anxiety, it is difficult to determine whether these sleep disturbances are a direct or indirect result of the antenna, but they definitely did not start until after the antenna was installed. Aaron and I have also experienced several bouts of nausea, diarrhea, and vomiting since the antenna was installed. These are problems I have not experienced since I was a child.

j. Neither Aaron or I have health insurance or a regular physician. As such, we have not had our health problems documented by a physician. We have, however, kept a log of illnesses experienced by our family since September 2019. We also used text messages and memory to piece together an illness log back to the antenna installation. This “illness calendar” is attached as Exhibit 5.

4. Neither Verizon nor the FCC have demonstrated that the specific conditions they are subjecting us to are safe long term, despite multiple requests for such evidence. Numerous studies, including several funded by the US government, have shown that long term exposure to this radiation may cause profound adverse bio-effects. There is also, of course, the “human evidence” of sickness – my daughters and my husband and I, along with similar suffering by many others – clearly show this radiation is harmful.

5. In late March 2019, our family hired local building biologist and electromagnetic radiation mitigation specialist, Eric Windheim, to come and measure the radiation in and around our home.

a. Mr. Windheim took measurements and provided us with a report on his findings. His report is attached as Exhibit 6. He measured exposure levels as high as 460,000 microwatts per square meter in Abigail and Hope’s bedroom. He told us these were the highest readings he had ever recorded indoors and attributed the high exposure levels to the proximity of the antenna.

b. Mr. Windheim recommended we move [REDACTED] and [REDACTED] into the master bedroom as this room is furthest from the antenna. All four of us have been sleeping in this room since March 30th, 2019. The girls no longer use their bedroom and we all try to

AFFIDAVIT OF HANNAH MCMAHON IN SUPPORT OF STANDING

stay downstairs as much as possible, where exposure is the lowest, though the radiation is still not low.

c. Mr. Windheim also recommended we install shielding on the walls facing the antenna which we did on March 30th, 2019. The shielding is fairly effective, yielding about a 10 fold reduction in exposure. However, exposure in our home is still much higher than a typical household which does not have a cell antenna right next to it and much higher than we would like it to be and it should be. Because of the shielding, [REDACTED] and [REDACTED] both had a long stretch of good health lasting until mid-September 2019. But then both children started to experience frequent colds and flu similar to January-April, before we had installed the shielding. Since September both children have also experienced frequent nausea, diarrhea, and vomiting.

d. The total cost for Eric's services were \$850. \$750 for the measurements and report, \$100 for the shielding. We would not have had to incur this expense but for the need to investigate and document the cause of our injuries.

6. Other individuals have also experienced health problems while at our home that have been attributed to the antenna. These include my brother Noah Davidson (see his Declaration, which is attached as Exhibit 7); my aunt Pamela Marquez (see her Declaration, attached as Exhibit 8); and Aaron's father Robert McMahon (see his Declaration, attached as Exhibit 9).

7. My brother, Noah Davidson has been instrumental in our efforts to get this antenna removed from near our home.

a. On April 10th 2019, my brother Noah Davidson submitted a letter to our Congresswoman Doris Matsui on our behalf. The letter is attached as Exhibit 10. Congresswoman Matsui then submitted this letter to the FCC. The letter explained how we had been affected by the radio frequency radiation were are being subjected to from the cell antenna immediately adjacent to our property, why we believed the antenna was causing us harm, and asked for the antenna to be turned off or relocated.

b. On May 2, 2019 the FCC responded stating that the antenna was operating within the FCC's guidelines and posed no threat to our health. The FCC's response is attached Exhibit 11. The FCC's response failed to address the majority of the issues raised in our complaint and failed to provide sufficient evidence that the specific conditions we are being subjected to are safe long term.

c. The FCC's May 2nd response stated that the area around the antenna that could exceed the FCC's general population exposure limit typically extended out 10-20 feet from the antenna face, near the height of the antenna. The antenna is only 9 feet from our property line and only 31 feet above ground level. We took this to mean that there was an accessible area on our property where exposure could exceed the FCC safety limit. We looked at the RF compliance report contained in the permit for the antenna outside our home. We did not find any information in this report about exposure higher than 6ft above ground.

d. We did not submit to the docket below because we were unaware of it. The FCC response to Congresswoman Matsui's letter did not mention the then still ongoing Docket 13-84, or invite us to participate in any of the FCC's proceedings. We have clearly,

AFFIDAVIT OF HANNAH MCMAHON IN SUPPORT OF STANDING

however, sought their assistance and involvement and they neither offered nor provided any meaningful relief. They have simply denied that any problem exists.

e. In June, 2019 my Noah Davidson and my daughter, who was 6 at the time, spoke to Sacramento City Council in a public hearing. They went to beg them to do something to get that tower removed. My daughter's said: "Hello, my name is [REDACTED] (McMahon) I am here to talk about the cell antenna in my front yard. I can no longer sleep in my bedroom because of it. Please move the cell antenna so our lives can go back to normal again. Thank you." The response of the city council was: "Thank you for coming here tonight to talk to your elected representatives. This is your place. You are always welcome to come here and tell us what you think." She doesn't need "elected" officials to speak to, she needs elected officials and public servant to protect her and her health and remove that tower. Instead they are harming her.

8. In June 2019, our family hired Waterford engineering to perform a more detailed RF compliance report for the antenna outside our home. The Waterford report is attached as Exhibit 12. They found that the antenna site emissions were generally within FCC exposure limits.

a. This report does reveal that there is an area around the antenna that could exceed the FCC's general population exposure limit. The area extends out 12.7 feet in all directions and down to 26 feet above ground level. Because the antenna is only 9 feet from our property line, the area around the antenna where FCC safety limits can be exceeded encompasses a small part of our front yard.

b. We have a right to be healthy and to have a quiet enjoyment of our home. But that is now not possible. The antenna placement has deprived us of full use of our property unless we are willing to expose ourselves to RF exposure levels that could exceed the FCC's general population exposure limit. The vice president of engineering for Waterford told us via email that this area should be avoided and to contact Verizon to have the antenna turned off should we want to access this area. It is unacceptable to have to get permission from Verizon to utilize our own private property.

c. The cost of the Waterford report was \$750. We would not have had to incur this expense but for the need to investigate and document the cause of our injuries.

9. We are being aggrieved by the FCC allowing the antenna outside our home to continue to operate and by their failure to adopt radio frequency radiation (RFR) exposure limits that are reflective of the peer-reviewed scientific research showing harm of non-thermal levels of pulsed and modulated radio frequency radiation. The FCC has dismissed the expert opinions of hundreds of doctors and scientists that have called for the FCC to lower their exposure limits. The FCC has also dismissed countless complaints and submissions from individuals like my family who claim to have been harmed by RFR exposures well under their current threshold for acceptable exposure.

10. The FCC's failure to adopt more stringent exposure standards is harming my family's physical health as well as our peace of mind inside our own home. Our home is being polluted with unsafe levels of RF radiation that are making my family sick.

11. Our repeated requests to the FCC, Verizon, and the City of Sacramento to have the antenna turned off have all been denied. All these parties cite the FCC as the sole authority capable of regulating with respect to RF emissions. As such, the FCC is solely responsible for

AFFIDAVIT OF HANNAH MCMAHON IN SUPPORT OF STANDING

protecting the health of the public and they are failing to do so as evidenced by my family's experience. Every time we contact public officials or private actors to explain the harm inflicted on our family from wireless radiation and seek some kind of accommodation or relief they point to the FCC emissions standards and claim the technology is safe to for all humans. Even when I tell them that wireless radiation sickness is an acknowledged disability and provide medical proof they ultimately say there is nothing that can or will be done. I have been told that the FCC standards preempt all other laws and remedies, and the only path for any meaningful relief is through the FCC, and specifically changes to their standards so emission levels do not trigger the type of conditions I and my children must deal with every day. I did that, but the FCC refused to acknowledge the problem or even address accommodations for those who suffer from radiation sicknesses. Nor did it answer questions raised by several whether its standards do in fact preempt the rights and remedies afforded by other laws. I and my children have suffered an injury-in-fact that is fairly traceable to the FCC Order.

12. We are also being aggrieved by the FCC's failure to address the area around the antenna outside our home where exposure can exceed the general population exposure limit. This area clearly extends onto our private property according to the report performed by Waterford Engineering. As a result, we no longer have full use of our property.

13. The FCC order did not adequately consider or reasonably respond to my comments or those of others who raised similar issues. Their decision to retain their existing rules and stay silent about preemption of state and federal disability laws entirely failed to resolve the problems my children and I face in daily life as a result of constant exposure to harmful radiation and the abject refusal of the wireless companies, utility companies, schools and other public places to do anything about our affliction. My children and I have been harmed by continuation of the existing rules since they do not adequately protect health and safety, and in fact directly allow continuous harms to be inflicted on me, my children and many others who suffer similar conditions. This harm will continue every day without respite until the rules are changed to truly protect health and safety, and take into account the needs of those who are or may become injured by electromagnetic radiation.

14. If the Court vacates or remands and requires the FCC to more fully consider health issues in general and the needs of those who already suffer then I, my family and those like us may have some hope. When the FCC creates biological-based standards the harm we have been caused will finally be acknowledged and our suffering no longer denied, ignored or ridiculed. Only then will the stigmatization and discrimination against us and others like us finally end, the public will finally become aware of the potential for harm from wireless devices and be able to take steps to protect themselves and the environment. Maybe then we will have some hope of beginning to rebuild our stolen and painful lives.

15. A court order mandating that the FCC adopt exposure limits aimed at preventing negative biological effects of pulsed and modulated radio frequency radiation would provide redress to our family by disallowing the operation of such powerful cell antennas so close to homes. . There is no genuine need to install such powerful equipment so close to homes; calls and texts can be sent and received at exposure levels of one microwatt per square meter or less. This can be, and has been for decades, achieved by installing the antennas further away from homes, or, alternatively, by installing lower wattage equipment.

AFFIDAVIT OF HANNAH MCMAHON IN SUPPORT OF STANDING

16. The FCC Order has caused great consternation and a worsened feeling of hopelessness for those who suffer like my family. I learned about the Children's Health Defense from my brother who first spoke with Dafna Tachover. She advised him about the legal situation and referred us to a pediatrician who is familiar with sickness associated with exposure to RF radiation. She also has been working to find attorneys to represent us and other families like us who have been injured. However, this is a complex issue and expensive to litigate and therefore we are grateful the Children's Health Defense for taking on filing this case against the FCC. We are grateful for the Children Health Defense for offering us assistance and for advocating for those who suffer from wireless radiation related conditions. I am now a member of the organization and finally feel like I belong to a community that understands the suffering we have endured and the challenges we face. Although the FCC's refusal to recognize the problem is quite disheartening, I and others at least have some hope that things may change; in the meanwhile, Children's Health Defense will be inundated by those who seek recognition and acceptance and seek help from the organization. It is clear that the FCC Order will impose great demands on Children's Health Defense above and beyond the cost of this case.

17. This concludes my Affidavit, but as noted above, I am also relying on the Affidavits of Dafna Tachover, Dr. Paul Dart, Dr. Toril Jelter and Dr. David Carpenter for the purpose of explaining why the particular facts described above demonstrate standing.

Hannah McMahon
TYPED NAME

Hannah McMahon

SUBSCRIBED AND SWORN TO BEFORE ME this ___ day of ___, 2020, to certify which witness my hand and official seal.

[Seal]

Notary Public in and for _____

See notary attached
M.Y.
06-03-2020
M.Y.

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California

County of Sacramento

Subscribed and sworn to (or affirmed) before me on this 3
day of June, 2020, by Hannah Mamakon

proved to me on the basis of satisfactory evidence to be the
person(s) who appeared before me.



(Seal)

Signature [Signature]

**EXHIBIT 1 TO AFFIDAVIT OF HANNAH MCMAHON IN SUPPORT OF
STANDING**



**EXHIBIT 2 TO AFFIDAVIT OF HANNAH MCMAHON IN SUPPORT OF
STANDING**

18-19**Sutterville Elementary**

4967 Monterey Way, Sacramento CA 95822
Generated on 01/28/2020 10:04:36 AM Page 1 of 1

Student Period Attendance Detail

Terms Included: All Terms
Course Summary

Course	Excused	Unexcused	Tardy
0000A-3 HOMEROOM KG - AM	3	7	0

Period Summary

Period	Excused	Unexcused	Tardy
ATT	3	7	0

Day Summary

Date	Periods
04/11/2019 Cycle Day 1	OTHR
<i>Description: Other - Personal Unexcused</i>	
03/01/2019 Cycle Day 1	ISN
<i>Description: Independent Study - Incomplete</i>	
02/28/2019 Cycle Day 1	ISN
<i>Description: Independent Study - Incomplete</i>	
02/27/2019 Cycle Day 1	ISN
<i>Description: Independent Study - Incomplete</i>	
02/26/2019 Cycle Day 1	ISN
<i>Description: Independent Study - Incomplete</i>	
02/25/2019 Cycle Day 1	ISN
<i>Description: Independent Study - Incomplete Comments: out of town</i>	
02/05/2019 Cycle Day 1	HLTH
<i>Description: Health</i>	
02/04/2019 Cycle Day 1	HLTH
<i>Description: Health</i>	
02/01/2019 Cycle Day 1	HLTH
<i>Description: Health</i>	
11/15/2018 Cycle Day 1	UNV
<i>Description: Unverified - Incomplete</i>	
<i>Comments: Medical due to smoke</i>	

Term Summary

	Periods	
T1	ATT	Total
Absent	1	1
Early Release	0	0
Tardy	0	0
T2	ATT	Total
Absent	8	8
Early Release	0	0
Tardy	0	0
T3	ATT	Total
Absent	1	1
Early Release	0	0
Tardy	0	0

19-20

Sutterville Elementary

4967 Monterey Way, Sacramento CA 95822
Generated on 01/28/2020 10:03:39 AM Page 1 of 1

Student Period Attendance Detail

Terms Included: All Terms
Course Summary

Course	Excused	Unexcused	Tardy
1000-3 HOMEROOM 1	3	2	0

Period Summary

Period	Excused	Unexcused	Tardy
ATT	3	2	0

Day Summary

Date	Periods
12/17/2019 Cycle Day 1	UNV
<i>Description: Unverified - Incomplete</i>	
12/04/2019 Cycle Day 1	PART
<i>Description: Partial Day Present</i>	
<i>Comments: out at 12:55, doctor appt.</i>	
11/22/2019 Cycle Day 1	HLTH
<i>Description: Health Comments: Dr. App - note from Dr</i>	
10/14/2019 Cycle Day 1	UNV
<i>Description: Unverified - Incomplete</i>	
10/07/2019 Cycle Day 1	HLTH
<i>Description: Health Comments: per parent webform 10/7: student has fever/cold</i>	
09/16/2019 Cycle Day 1	HLTH
<i>Description: Health Comments: sick, webform sub</i>	

Term Summary

	Periods	
T1	ATT	Total
Absent	4	4
Early Release	0	0
Tardy	0	0
T2	ATT	Total
Absent	1	1
Early Release	0	0
Tardy	0	0
T3	ATT	Total
Absent	0	0
Early Release	0	0
Tardy	0	0

**EXHIBIT 3 TO AFFIDAVIT OF HANNAH MCMAHON IN SUPPORT OF
STANDING**

GUNNAR HEUSER, M.D., Ph.D., F.A.C.P., F.A.C.F.E., B.C.F.E.
NeuroMed and NeuroTox Associates
A Medical Group

Fellow, American College of Physicians
Fellow, American EEG Society

Diplomate (McGill University), Internal Medicine
Diplomate, American College of Forensic Examiners

NEUROTOXICOLOGY

IMMUNOTOXICOLOGY

December 4, 2019

Re: [REDACTED]

To Whom It May Concern:

I have carefully reviewed the available medical and also personal history and have also personally met and evaluated the above named two girls on December 4, 2019.

In late December of 2018, a Verizon small cell antenna was installed 60 feet away from the girls' bedroom window. The antenna which has a 360- degree radiation pattern is emitting microwave radiation directly into their bedroom. Approximately one month after the antenna installation the girls began experiencing cold/flu like symptoms with a persistent cough. By the end of February, 2019, [REDACTED] were still ill with the same symptoms. They had also begun to experience sleep disturbances, occasional headaches, and chronic fatigue. Other

PO Box 5066, El Dorado Hills, California (310) 500-0041
Email – toxguns@netscape.net website: emfdoc.com

AD_00179

members of the family were also experiencing unusual symptoms since the antenna had been installed. Multisystem complaints continued until the girls were relocated to a safer area of the house.

In late March a careful and detailed study of exposure was performed by Eric Windheim of EMF Solutions and completed on June 2, 2019. This convincingly documents exposure to harmful electromagnetic fields. Eric Windheim writes "Your measured levels of RFR are highly toxic, hazardous and dangerous to all residents, guests and pets at your home". Shielding was recommended and performed. It led to a significant improvement of symptoms in both girls. Although [REDACTED] still is experiencing more frequent cold/flu symptoms roughly once per month since before exposure when she was only having cold/flu symptoms no more than once or twice a year. Both [REDACTED] still have occasional sleep disturbances.

After the above review of their histories, personal consultation, and the report of Eric Windheim, I concluded that both girls suffered from toxic encephalopathy which specifically includes Electromagnetic Sensitivity (EMS). These symptoms were caused by exposure to the installed small cell antenna.

The primary treatment for Electromagnetic Sensitivity is avoidance of man-made non-ionizing radiation sources. It is my professional opinion and strong recommendation that the antenna outside the McMahon home be permanently turned off or relocated in order to no longer impair [REDACTED] health and quality of life.

My opinion is based on experience with several thousand patients with toxic encephalopathy and several hundred patients with Electrohypersensitivity (EHS) and/or EMF Sensitivity, review of the pertinent literature, and discussion with national and international experts in the field. My opinion is also supported by peer reviewed publications of mine.

A number of years ago I studied 6 firefighters all of whom had been exposed to just 2G cell phone tower emissions and had developed impairment of function as a result. All of their brain scans were definitely abnormal. This study is now being prepared for publication.

Below are listed a number of pertinent publications showing abnormalities of brain function after exposure to electromagnetic fields.

My Curriculum Vitae may be viewed and downloaded on my website: emfdoc.com.

A handwritten signature in black ink, appearing to read 'G. Heuser', with a stylized, wavy line extending from the end.

Gunnar Heuser MD

Pertinent Publications (from my C.V.)

45. Heuser, G.; Mena, I. NeuroSPECT in Neurotoxic Chemical Exposure. Demonstration of Long Term Functional Abnormalities. Toxicology and Industrial Health, 14, #6: 813-827, 1998.

48. Bartha, L.; et al. Multiple Chemical Sensitivity: A 1999 Consensus. Arch. Environ Hlth, 54:147-149, 1999.

50. Heuser, G., Axelrod, P., Heuser, S.: Defining Chemical Injury: A Diagnostic Protocol and Profile of Chemically Injured Civilians, Industrial Workers and Gulf War Veterans. International Perspectives in Public Health. 13:1-27, 2000.

51. Heuser, G., Wu, J.C. Deep Subcortical (incl. limbic) Hypermetabolism in Patients with Chemical Intolerance. Human PET Studies. Annals of the New York Academy of Sciences, 933:319-322, 2001.

56. Heuser, G., Aguilera, O., Heuser, S., Gordon, R. Clinical Evaluation of Flight Attendants after Exposure to Fumes in Cabin Air. The Journal of Occupational Health and Safety (Australia and New Zealand) 21 (5) 455-459. October 2005.

61. Heuser, G., Heuser, SA. Functional brain MRI in patients complaining of electrohypersensitivity after long term exposure to electromagnetic fields. Reviews on Environmental Health. Published online July 5, 2017. **DOI 10.1515/reveh-2017-0014**

62. Heuser, G., Heuser, SA. Corrigendum to: Functional brain MRI in patients complaining of electrohypersensitivity after long term exposure to electromagnetic fields. Reviews on Environmental Health. Published 2017; 32(4):379-380. (DOI 10.1515/reveh-2017-0027)

OTHER PERTINENT REFERENCES

1. Belpomme D, Campagnac C, Irigaray P, Reliable disease biomarkers characterizing and identifying electrohypersensitivity and multiple chemical sensitivity as two etiopathogenic aspects of a unique pathological disorder. *Rev Environ Health* 2015;30(4): 251-7.
2. Huber R, Treyer V, Schuderer J, Berthold T, Buck A, Kuster N, Landolt HP, Achermann P. Exposure to pulse- modulated radio frequency electromagnetic fields affects regional cerebral blood flow. *Eur J Neurosci* 2005;21(4):1000–6.
3. Haarala C, Aalto S, Hautzel H, Sipilä H, Hämäläinen H, Rinne JO. Effects of a 902 MHz mobile phone on cerebral blood flow in humans: a PET study. *Neuroreport*. 2003;14(16):2019–23.
4. Huber R, Treyer V, Borbely AA, et al. Electromagnetic fields, such as those from mobile phones, alter regional cerebral blood flow and sleep and waking EEG. *J Sleep Res* 2002;11(4):289– 95.
5. Heuser G, Heuser SA. Functional brain MRI in patients complaining of electrohypersensitivity after long term exposure to electromagnetic fields. *Rev Environ Health* 2017;32(3):291-99
6. Sage, C Burgio, E. (2017), Electromagnetic fields, pulsed radiofrequency radiation, and epigenetics: How wireless technologies may affect childhood development. *Child Dev*. doi:10.1111/cdev.12824
7. Redmayne M, Johansson O. Could myelin damage from radiofrequency electromagnetic field exposure help explain the functional impairment electrohypersensitivity? A review of the evidence. *Journal of Toxicology and Environmental Health*. 2014;17(5):247-58.
8. Kim, JH, Yu DH1, Huh YH2, Lee EH1, Kim HG1, Kim HR1. Long-term exposure to 835 MHz RF-EMF induces hyperactivity, autophagy and demyelination in the cortical neurons of mice. *Scientific Reports* 2017;7(4):1129.
9. Deshmukh, P.S., et al. Cognitive impairment and neurogenotoxic effects in rats exposed to low-intensity microwave radiation. *International Journal of Toxicology*. 2015;34(3):284-90.
10. Buchner K, Eger H. Changes of Clinically Important Neurotransmitters under the Influence of Modulated RF Fields—A Long-term Study under Real-life Conditions. *Umwelt-Medizin-Gesellschaft* 2011;24(1):44-5.
11. Dasdag et al Effects of 2.4 Ghz Radiofrequency Radiation Emitted From Wi-Fi Equipment on microRna expression in brain issue. *International Journal of Radiation Biology* 2015;16:1-26.
12. Saikhedkar N, et al. Effects of mobile phone radiation (900 MHz radiofrequency) on structure and functions of rat brain. *Neurological Research* 2014;2(6):2499-504.
13. Varghese, R, et al. Rats exposed to 2.45 GHz of non-ionizing radiation exhibit behavioral changes with increased brain expression of apoptotic caspase 3. *Pathophysiology* 2017

14. 15. Saikhedkar N, et al. Effects of mobile phone radiation (900 MHz radiofrequency) on structure and functions of rat brain. *Neurological Research* 2014;2(6):2499-504.
15. Varghese, R, et al. Rats exposed to 2.45 GHz of non-ionizing radiation exhibit behavioral changes with increased brain expression of apoptotic caspase 3. *Pathophysiology* 2017
16. Obajuluwa, A. Exposure to radio-frequency electromagnetic waves [2.5GHz] alters acetylcholinesterase gene expression, exploratory and motor coordination linked behaviour in male rats. *Toxicology Reports* 2017;4:530– 534.
17. Mortazavi et al, The pattern of mobile phone use and prevalence of self-reported symptoms in elementary and junior high school students in Shiraz, Iran. *Iran J Med Sci* June 2011;36(2)
18. Zhang, Jet al, Effects of 1.8 GHz radiofrequency fields on the emotional behavior and spatial memory of adolescent mice. *International Journal of Environmental Research and Public Health*. 2017;14:344
19. Wang et al, Mobile phone use and the risk of headache: A systematic review and meta-analysis of cross-sectional studies. *Sci Rep* 2017 Oct 3;7(1):12595.
20. Pall, M. Microwave frequency electromagnetic fields (EMFs) produce widespread neuropsychiatric effects including depression. *Journal of Chemical Neuroanatomy* 2016;75:43–51
21. Mortazavi S, Habib A, Ganj-Karami A, et al. Alterations in TSH and Thyroid Hormones following Mobile Phone Use. *Oman Med J* 2009;24(4):274–278.
22. Eskander EF et al. How does long term exposure to base stations and mobile phones affect human hormone profiles? *Clin Biochem*. 2011 Nov 27.
23. Koyu, A. 2450 MHz electromagnetic field effect on the rat thyroid tissue; Protective role of selenium and L-Carnitine. *Med J SDU / SDÜ Tıp Fak Derg* 2014;21(4):133-141.
24. Baby NM, Koshy G, Mathew A. The effect of electromagnetic radiation due to mobile phone use on thyroid function in medical students studying in a medical college in south India. *Indian J Endocrinol Metab*. 2017 Nov- Dec;21(6):797-802.
25. Esmekaya M, Seyhan N, Omeroglu S. Pulse modulated 900 MHz radiation induces hypothyroidism and apoptosis in thyroid cells: A light, electron microscopy and immunohistochemical study. *Int. J. Radiat. Biol* 2010 December;86(12):1106–16.
26. De Luca C, Chung S, Thai J, Raskovic D, et al., Metabolic and genetic screening of electromagnetic hypersensitive subjects as a feasible tool for diagnostics and intervention, mediators of inflammation. Article ID 924184 2014; 2014(14).
27. Liakouris, Radiofrequency (RF) sickness in the lilienfeld study: An effect of modulated microwaves? *Archives of Environmental Health* May/Jun 1998.
28. Johansson, O. Electrohypersensitivity: a functional impairment due to an inaccessible environment *Rev Environ Health* 2015;30(4):311–321.
29. Ceyhan AM, Akkaya VB, Güleçol ŞC, et al. Protective effects of β -glucan against oxidative injury induced by 2.45-GHz electromagnetic radiation in the skin tissue of rats. *Arch Dermatol Res*. 2012 Sep;304(7):521-7
30. Belyaev I, Dean A, Eger H et al. EUROPAEM EMF Guideline 2016 for the prevention, diagnosis and treatment of EMF-related health problems and illnesses. *Rev Environ Health* 2016; DOI 10.1515/reveh-2016-0011

31. Kostoff, R N, Lau C GY. Chapter 4 of Microwave *Effects on DNA and Proteins*, Modified health effects of non-ionizing electromagnetic radiation combined with other agents reported in the biomedical literature. 2017
32. Lim H. Korean pediatric reference intervals for FT4, TSH, and TPO Ab and the prevalence of thyroid dysfunction: A population-based study. Clin Biochem. 2017 Dec;50(18):1256-1259.
33. Belpomme D, Hardell L, Belvaey P, Burgio E, Carpenter DO. Thermal and non-thermal health effects of low intensity non-ionizing radiation: an international perspective. Environ Pollut 2018 Nov;242(Pt A):643-58.

**EXHIBIT 4 TO AFFIDAVIT OF HANNAH MCMAHON IN SUPPORT OF
STANDING**



Toril H. Jelter MD
3011 Citrus Circle Suite 103
Walnut Creek, CA. 94598
(925) 935-5425

March 2nd, 2020

MEDICAL OPINION LETTER for [REDACTED]

To Whom It May
Concern:

I am Dr. Toril H. Jelter. I became Board Certified in Pediatrics in December 1996 and recertified in December 2001 and December 2013. My curriculum vitae is attached. I have been asked to write a medical opinion letter pertaining to the possibility that [REDACTED] [REDACTED] health is being adversely affected by the Verizon antenna placed outside her bedroom window at 7597 Pocket Road, Sacramento CA. 95831 in December 2018. This new Verizon small cell omnidirectional canister antenna is on top of the city owned light pole, SLT-07551 and only 60 feet from [REDACTED] bedroom. Current health guidelines for safer exposure limits to radio frequency (RF) radiation is < 1 microwatt per meter squared if the exposure persists for > 4 hours in a 24 hour period. The initial RF measurement in Abigail's bedroom was 460,000 microwatts per meter squared!

AD_00187

I have personally reviewed [REDACTED] medical history. Details of her medical history were

obtained in a medical interview with her mother Hannah McMahon and her uncle

Noah Davidson on January 28th and February 17th of 2020. In addition I have reviewed:

1. [REDACTED] school attendance record for Kindergarten and 1st Grade
2. Declaration letter written by her father Aaron McMahon on April 13th, 2020
3. Declaration letter written by her grandfather Robert M. McMahon on April 13th, 2020
4. EMF Assessment Report by Certified Electromagnetic Radiation Specialist Eric Windheim
Date June 3, 2019
5. EMF Assessment Report by David Charles Cotton Jr. Registered Professional Electrical
Engineer Date December 6, 2019
6. Sickness Log in Calendar and Text format logged by parents and uncle Noah
7. AMA Symptom questionnaire for Electrohypersensitivity or Microwave Radiation Syndrome
8. Blood work

██████████ has been a patient under my care since January 28th, 2020. Her primary diagnosis is Microwave Radiation Syndrome. She has also been diagnosed with Exposure to Non-Ionizing Radiation, Frequent Respiratory infections, Frequent Gastrointestinal Infections, Secondary Immune System Impairment, Low Hemoglobin/ Hematocrit, Elevated Monocytes and Allergic Rhinitis.

I am familiar with ██████████ history and performed a medical exam on February 17th, 2020. ██████████ has no other known risk factors that may have precipitated her current condition. After a review of ██████████ pertinent medical records and a medical exam it is my professional opinion that it is highly likely that the Verizon antenna placed 60 feet from her bedroom window is the cause of her frequent infections and microwave radiation syndrome. In my clinical experience and in the independent peer reviewed scientific medical literature (bioinitiative.org) it is known that excessive and chronic exposure to microwave radiation can adversely affect immune function resulting in more frequent and more severe infections.

Sincerely



Toril H. Jelter
MD

Attachments:

Curriculum Vitae 2020

Reference List: Studies Reporting Disrupted Immune Function from Exposure to Low Intensity Radio Frequency Radiation (Non-thermal) by Cindy Sage, MA, Sage Associates and Stephanie Kerst, Certified Electromagnetic Radiation Specialist March 27, 2020

Disrupted Immune Function from Exposure to Low- Intensity Non-Ionizing Radiation (Radiofrequency Radiation) by Cindy Sage, MA, Sage Associates and Stephanie Kerst, Certified Electromagnetic Radiation Specialist March 27, 2020

<https://bioinitiative.org/wp-content/uploads/2020/04/Final-Published-Studies-Reporting-Disrupted-Immune-Function-from-Low-Intensity-Exposure-to-Radiofrequency-Radiation.pdf>

Toril H. Jelter MD
Curriculum Vitae

Mount Diablo Integrated Wellness Center
3011 Citrus Circle Suite 103
Walnut Creek, CA. 94598
Phone: (925) 935-5425
E-mail: info@MDIWellnesscenter.com

CERTIFICATION AND LICENSURE

California State Board License 1998
Board Certified Pediatrics 1996, Recertified 2003, 2013
New Jersey State Board License 1993
Medical Doctor, General Practitioner, Norway 1989

EDUCATION

Defeat Autism Now conferences 2007, 2008, 2012
Pediatric Residency, Columbia University College of Physicians and Surgeons
Overlook Hospital, Summit New Jersey (1990-1993)
Internship, Lovisenberg Hospital, Oslo (1986-1987)
Medisinsk Embetseksamen (MD), University of Oslo, Norway (1985)
(Home of the Nobel Peace Prize)

EMPLOYMENT

Private practice, Walnut Creek, CA. 2007-present
Bayside Medical Group (1999-2007)
Pinnacle Medical Group (1995-1999)
Private practice, Springfield, New Jersey (1993-1995)
Norwegian Cancer Society, Oslo, Norway (1987-1988)

HONORS AND AWARDS

AMA Physician's Recognition Award (1995-1998)
Honors, Clinical Disciplines, University of Oslo (1985)

PROFESSIONAL SOCIETY MEMBERSHIP

American Academy of Pediatrics
CHE, Collaborative on Health and Environment
PHIRE, Physicians Health Initiative on Radiation and Environment

ADVOCACY WORK

You Tube: Part 5 Dr. Toril Jelter- Health Effects of Non-Ionizing Radiation in Children
Website: Electronic Silent Spring " Calming Behavior in Children with Autism or ADHD"
https://iacc.hhs.gov/meetings/iacc-meetings/2014/full-committee-meeting/april8/written_public_comments_040814.pdf pages 13-19

PERSONAL Married, two children Languages: English, Spanish, Norwegian

AD-001917

Reference List

Studies Reporting Disrupted Immune Function from Exposure to Low-Intensity Radiofrequency Radiation (Non-thermal)

(Wireless Antenna Facilities, Wi-Fi Routers
Wireless Laptops, Tablets, Wireless Utility Meters)

Ashraf AA, Safaai BD, Zaki N. 2011. The effects on cell mobility due to exposure to EMF radiation. *Advanced Computing; An International Journal* 2:1-7.

Belyaev IY, Hillert L, Protopopova M, Tamm C, Malmgren LO, Persson BR, Selivanova G, Harms-Ringdahl M. 2005. 915 MHz microwaves and 50 Hz magnetic field affect chromatin conformation and 53BP1 foci in human lymphocytes from hypersensitive and healthy persons. *Bioelectromagnetics* 26(3):173-184.

Boscol et al, 2001. Effects of electromagnetic fields produced by radiotelevision broadcasting stations on the immune system of women. *Sci Total Environ* 273(1-3):1-10.

Buchner K, Eger H., 2011. Changes of Clinically Important Neurotransmitters under the Influence of Modulated RF Fields—A Long-term Study under Real-life Conditions *Umwelt-Medizin-Gesellschaft* 24(1): 44-57. Original study in German.

Dabrowski MP, Stankiewicz, Sobiczewska S, Szmigielski S. 2001. Immunotropic influence of electromagnetic fields in the range of radio- and microwave frequencies [article in Polish], *Pol. Merkur. Lekarski* 11 (447-451).

Dabrowski MP, Stankiewicz, Kubacki R, Sobiczewska S, Szmigielski S. 2003. Immunotropic effects in cultured human blood mononuclear cells pre-exposed to low-level 1300 MHz pulse-modulated microwave field. *Electromagn. Biol. Med.* 22 (1-13).

D'Inzeo, G et al, 1988. Microwave effects on acetylcholine-induced channels in cultured chick myotubes. *Bioelectromagnetics* 9: 363-372.

Donnellan M, McKenzie DAR, French PW. 1997. Effects of exposure to electromagnetic radiation at 835 MHz on growth, morphology and secretory characteristics of a mast cell analogue, RBL-2H3. *Cell Biol. Int* 21: 427-439.

Elekes, E, 1996. Effect on the immune system of mice exposed chronically to 50 Hz amplitude-modulated 2.45 GHz microwaves. *Bioelectromagnetics* 17:246-248.

Esmekaya MA, Aytekin E, Ozgur E, Guler G, Ergun MA, Omeroglu S. et al., 2011. Mutagenic and morphologic impacts of 1.8 GH radiofrequency radiation on human peripheral blood lymphocytes (hBPLs) and possible protective role of pre-treatment with Ginkgo biloba (EGb 761). *Science of Total Environment* 410:59-64.

Disrupted Immune Function from Exposure to Low-Intensity Non-Ionizing Radiation (Radiofrequency Radiation)

Power Density (uW/cm²)		References
0.0006 - 0.001 uW/cm ²	Chronic exposure to base station RF (whole-body) in humans showed increased stress hormones; levels substantially decreased; higher levels of adrenaline and nor-adrenaline; dose-response seen; chronic physiological stress in cells even after 1.5 years.	Buchner, 2012
1.0 uW/cm ²	RFR caused significant effect on immune function in mice	Fesenko, 1999
1.0 uW/cm ²	RFR at 8.15 - 18 GHz significantly increased immune function of T-cells and macrophage cells	Novoselova, 1999
1.0 uW/cm ²	RFR at 8.15 to 18 GHz caused significant increase in tumor necrosis factor in macrophage cells interfering with process of cell immunity status	Novoselova, 1998
1.0 uW/cm ²	130% to 150% increase in cytotoxic activity of NK cells from 8.15 - 18 GHz persisting 24 hours after cessation of RFR exposure indicating hyperactive immune function.	Fesenko, 1999
2 - 4 uW/cm ²	Acetylcholine-induced ion channel disruption and altered cell membranes	D'Inzeo, 1988
5 uW/cm ²	RFR exposure caused decreased immune function in NK lymphocytes	Boscol, 2001
5.25 uW/cm ²	20 minutes of RFR at cell tower frequencies induced cell stress, changes in cell membrane	Kwee, 2001
13.5 uW/cm ²	RFR affected human lymphocytes (immune cells) and induced stress response in cells	Sarimov, 2004
37.5 uW/cm ²	Weakening of immune function with 9.4 GHz pulsed RFR over 5 days	Veyret, 1991
60 uW/cm ²	900 MHz pulsed RFR intensified immune function in white blood cells indicating hyperactive immune response	Stankiewicz, 2006
92.5 uW/cm ²	915 MHz RFR caused genetic changes in human lymphocytes (white blood cells)	Belyaev, 2005
100 uW/cm ²	Increase in immune function due to RFR exposure (activation response)	Elekes, 1996

Cindy Sage, MA, Sage Associates and Stephanie Kerst, Certified Electromagnetic Radiation Specialist
March 27, 2020



Toril H. Jelter MD
3011 Citrus Circle Suite 103
Walnut Creek, CA. 94598
(925) 935-5425

March 18th, 2020

MEDICAL OPINION LETTER for [REDACTED] McMahon
D.O.B.10/23/2018

To Whom it May Concern:

I am Dr. Toril H. Jelter. I became Board Certified in Pediatrics in December 1996 and recertified in December 2001 and December 2013. I have been asked to write a medical opinion letter pertaining to the possibility that [REDACTED] McMahon's health is and has been adversely affected by the Verizon antenna placed outside her bedroom window at 7597 Pocket Road, Sacramento CA. 95831 in December 2018. This new Verizon small cell omnidirectional canister antenna is on top of the city owned light pole, SLT-07551 and only 60 feet from Hope's bedroom. Current health guidelines for safer exposure limits to radio frequency (RF) radiation is < 1 microwatt per meter squared if the exposure persists for > 4 hours in a 24 hour period. The initial RF measurement

in Hope's bedroom was 460,000 microwatts per meter squared!

I have personally reviewed [REDACTED] medical history. Details of her medical history were obtained in a medical interview with her mother Hannah McMahon and her Uncle Noah Davidson on January 28th and February 17th of 2020. In addition I have reviewed:

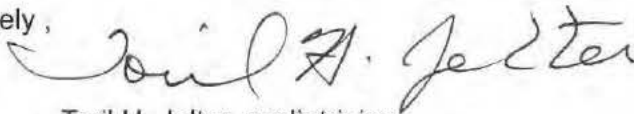
1. [REDACTED] primary care pediatrician's medical records from birth to present. On 11/1/2019 during the 4 year exam it is noted that Hope "continues to have meltdowns" and there is parental concern. (It is known in the independent peer reviewed literature that microwave radiation can affect the nervous system, behavior and neurotransmitters particularly in children.)
2. Declaration letter written by her father Aaron McMahon on April 13th, 2020
3. Declaration letter written by her grandfather Robert M. McMahon on April 13th, 2020
4. EMF Assessment Report by Certified Electromagnetic Radiation Specialist Eric Windheim Date June 3, 2019
5. EMF Assessment Report by David Charles Cotton Jr. Registered Professional Electrical Engineer Date December 6, 2019
6. Sickness Log in Calendar and Text format logged by parents and Uncle Noah
7. AMA Symptom questionnaire for Electrohypersensitivity or Microwave Radiation Syndrome

██████ McMahon has been a patient under my care since January 28th, 2020. Her primary diagnosis is Microwave Radiation Syndrome. She has also been diagnosed with Exposure to Non-Ionizing Radiation ICD 10 W-90, Frequent Respiratory infections, Frequent Gastrointestinal Infections and Allergic Rhinitis.

I am familiar with ██████ medical history and performed a medical exam on February 17th, 2020. ██████ has no other known risk factors that may have precipitated her current condition.

After a review of ██████ pertinent medical records and a medical exam it is my professional opinion that it is highly likely that the Verizon antenna placed 60 feet from her bedroom window is the cause of her frequent infections and Microwave Radiation syndrome. In my clinical experience and in the independent peer reviewed scientific medical literature (bioinitiative.org - see attachment) it is known that excessive and chronic exposure to microwave radiation can adversely affect behavior (meltdowns) and immune function resulting in more frequent and more severe infections.

Sincerely ,



Toril H. Jelter pediatrician

Curriculum Vitae attached

Summary of immune effects of non ionizing radiation from Bioinitiative Report attached

Attachments:

Curriculum Vitae 2020

Reference List: Studies Reporting Disrupted Immune Function from Exposure to Low Intensity Radio Frequency Radiation (Non-thermal) by Cindy Sage, MA, Sage Associates and Stephanie Kerst, Certified Electromagnetic Radiation Specialist March 27, 2020

Disrupted Immune Function from Exposure to Low- Intensity Non-Ionizing Radiation (Radiofrequency Radiation) by Cindy Sage, MA, Sage Associates and Stephanie Kerst, Certified Electromagnetic Radiation Specialist March 27, 2020

<https://bioinitiative.org/wp-content/uploads/2020/04/Final-Published-Studies-Reporting-Disrupted-Immune-Function-from-Low-Intensity-Exposure-to-Radiofrequency-Radiation.pdf>

Toril H. Jelter MD
Curriculum Vitae

Mount Diablo Integrated Wellness Center
3011 Citrus Circle Suite 103
Walnut Creek, CA. 94598
Phone: (925) 935-5425
E-mail: info@MDIWellnesscenter.com

CERTIFICATION AND LICENSURE

California State Board License 1998
Board Certified Pediatrics 1996, Recertified 2003, 2013
New Jersey State Board License 1993
Medical Doctor, General Practitioner, Norway 1989

EDUCATION

Defeat Autism Now conferences 2007, 2008, 2012
Pediatric Residency, Columbia University College of Physicians and Surgeons
Overlook Hospital, Summit New Jersey (1990-1993)
Internship, Lovisenberg Hospital, Oslo (1986-1987)
Medisinsk Embetseksamen (MD), University of Oslo, Norway (1985)
(Home of the Nobel Peace Prize)

EMPLOYMENT

Private practice, Walnut Creek, CA. 2007-present
Bayside Medical Group (1999-2007)
Pinnacle Medical Group (1995-1999)
Private practice, Springfield, New Jersey (1993-1995)
Norwegian Cancer Society, Oslo, Norway (1987-1988)

HONORS AND AWARDS

AMA Physician's Recognition Award (1995-1998)
Honors, Clinical Disciplines, University of Oslo (1985)

PROFESSIONAL SOCIETY MEMBERSHIP

American Academy of Pediatrics
CHE, Collaborative on Health and Environment
PHIRE, Physicians Health Initiative on Radiation and Environment

ADVOCACY WORK

You Tube: Part 5 Dr. Toril Jelter- Health Effects of Non-Ionizing Radiation in Children
Website: Electronic Silent Spring " Calming Behavior in Children with Autism or ADHD"
https://iacc.hhs.gov/meetings/iacc-meetings/2014/full-committee-meeting/april8/written_public_comments_040814.pdf pages 13-19

PERSONAL Married, two children Languages: English, Spanish, Norwegian

Reference List

Studies Reporting Disrupted Immune Function from Exposure to Low-Intensity Radiofrequency Radiation (Non-thermal)

(Wireless Antenna Facilities, Wi-Fi Routers
Wireless Laptops, Tablets, Wireless Utility Meters)

Ashraf AA, Safaai BD, Zaki N. 2011. The effects on cell mobility due to exposure to EMF radiation. *Advanced Computing; An International Journal* 2:1-7.

Belyaev IY, Hillert L, Protopopova M, Tamm C, Malmgren LO, Persson BR, Selivanova G, Harms-Ringdahl M. 2005. 915 MHz microwaves and 50 Hz magnetic field affect chromatin conformation and 53BP1 foci in human lymphocytes from hypersensitive and healthy persons. *Bioelectromagnetics* 26(3):173-184.

Boscol et al, 2001. Effects of electromagnetic fields produced by radiotelevision broadcasting stations on the immune system of women. *Sci Total Environ* 273(1-3):1-10.

Buchner K, Eger H., 2011. Changes of Clinically Important Neurotransmitters under the Influence of Modulated RF Fields—A Long-term Study under Real-life Conditions *Umwelt-Medizin-Gesellschaft* 24(1): 44-57. Original study in German.

Dabrowski MP, Stankiewicz, Sobiczewska S, Szmigielski S. 2001. Immunotropic influence of electromagnetic fields in the range of radio- and microwave frequencies [article in Polish], *Pol. Merkur. Lekarski* 11 (447-451).

Dabrowski MP, Stankiewicz, Kubacki R, Sobiczewska S, Szmigielski S. 2003. Immunotropic effects in cultured human blood mononuclear cells pre-exposed to low-level 1300 MHz pulse-modulated microwave field. *Electromagn. Biol. Med.* 22 (1-13).

D'Inzeo, G et al, 1988. Microwave effects on acetylcholine-induced channels in cultured chick myotubes. *Bioelectromagnetics* 9: 363-372.

Donnellan M, McKenzie DAR, French PW. 1997. Effects of exposure to electromagnetic radiation at 835 MHz on growth, morphology and secretory characteristics of a mast cell analogue, RBL-2H3. *Cell Biol. Int* 21: 427-439.

Elekes, E, 1996. Effect on the immune system of mice exposed chronically to 50 Hz amplitude-modulated 2.45 GHz microwaves. *Bioelectromagnetics* 17:246-248.

Esmekaya MA, Aytekin E, Ozgur E, Guler G, Ergun MA, Omeroglu S. et al., 2011. Mutagenic and morphologic impacts of 1.8 GHz radiofrequency radiation on human peripheral blood lymphocytes (hBPLs) and possible protective role of pre-treatment with Ginkgo biloba (EGb 761). *Science of Total Environment* 410:59-64.

Disrupted Immune Function from Exposure to Low-Intensity Non-Ionizing Radiation (Radiofrequency Radiation)

Power Density (uW/cm²)		References
0.0006 - 0.001 uW/cm ²	Chronic exposure to base station RF (whole-body) in humans showed increased stress hormones; levels substantially decreased; higher levels of adrenaline and nor-adrenaline; dose-response seen; chronic physiological stress in cells even after 1.5 years.	Buchner, 2012
1.0 uW/cm ²	RFR caused significant effect on immune function in mice	Fesenko, 1999
1.0 uW/cm ²	RFR at 8.15 - 18 GHz significantly increased immune function of T-cells and macrophage cells	Novoselova, 1999
1.0 uW/cm ²	RFR at 8.15 to 18 GHz caused significant increase in tumor necrosis factor in macrophage cells interfering with process of cell immunity status	Novoselova, 1998
1.0 uW/cm ²	130% to 150% increase in cytotoxic activity of NK cells from 8.15 - 18 GHz persisting 24 hours after cessation of RFR exposure indicating hyperactive immune function.	Fesenko, 1999
2 - 4 uW/cm ²	Acetylcholine-induced ion channel disruption and altered cell membranes	D'Inzeo, 1988
5 uW/cm ²	RFR exposure caused decreased immune function in NK lymphocytes	Boscol, 2001
5.25 uW/cm ²	20 minutes of RFR at cell tower frequencies induced cell stress, changes in cell membrane	Kwee, 2001
13.5 uW/cm ²	RFR affected human lymphocytes (immune cells) and induced stress response in cells	Sarimov, 2004
37.5 uW/cm ²	Weakening of immune function with 9.4 GHz pulsed RFR over 5 days	Veyret, 1991
60 uW/cm ²	900 MHz pulsed RFR intensified immune function in white blood cells indicating hyperactive immune response	Stankiewicz, 2006
92.5 uW/cm ²	915 MHz RFR caused genetic changes in human lymphocytes (white blood cells)	Belyaev, 2005
100 uW/cm ²	Increase in immune function due to RFR exposure (activation response)	Elekes, 1996


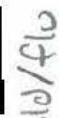

Cindy Sage, MA, Sage Associates and Stephanie Kerst, Certified Electromagnetic Radiation Specialist
March 27, 2020

**EXHIBIT 5 TO AFFIDAVIT OF HANNAH MCMAHON IN SUPPORT OF
STANDING**

February 2019

Su	Mo	Tu	We	Th	Fr	Sa
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	1	2

January 2019

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27  mild cold/flu	28 	29	30	31 	1	2

March 2019

Su	Mo	Tu	We	Th	Fr	Sa
24	25	26	27	28	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

February 2019

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
27	28	29	30	31	1 Severe cold/flu Headaches Sleep disturbances Missed school	2
3	4	5	6 Symptoms improve Slightly returns school	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27 Symptoms improve	28	1	2 Leave to Cabo

© Calendar-12.com

March 2019

April 2019

Su	Mo	Tu	We	Th	Fr	Sa
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2	3	4

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
24	25	26	27	28	1	2 Return home from Cabo
3	4 Cold/flu Symptoms worsen Sleep disturbances 114 headaches return	5 [REDACTED] [REDACTED] Sleep disturbances anxiety	6	7	8	9
10			13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30 Shielding installed
31 Symptoms continue	1	2	3	4	5	6

© Calendar-12.com

April 2019

May 2019

Su	Mo	Tu	We	Th	Fr	Sa
28	29	30	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	1

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
31	1 [REDACTED] severe cold/flu symptoms persist headaches & sleep disturbances persist	2 [REDACTED] anxiety and sleep disturbances persist	3	4	5	6
7	8	9	10	11	12 [REDACTED] Significant improvement in symptoms	13 [REDACTED] Sense of relief and improvement in sleep quality
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2	3	4

June 2019

Su	Mo	Tu	We	Th	Fr	Sa
26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	1	2	3	4	5	6

May 2019

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
28	29	30	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	1

© Calendar-12.com

June 2019

July 2019

Su	Mo	Tu	We	Th	Fr	Sa
30	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3


Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	1	2	3	4	5	6

© Calendar-12.com

July 2019

August 2019

Su	Mo	Tu	We	Th	Fr	Sa
28	29	30	31	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
30	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18  Newseu	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3

© Calendar-12.com

August 2019

September 2019

Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
28	29	30	31	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

© Calendar-12.com

September 2019

October 2019

Su	Mo	Tu	We	Th	Fr	Sa
29	30	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
8	9	10	11	12	13	14 mild/cold/flu
15 →	16 severe cold/flu w/ fever & chills	17 symptoms improve back to mild	18	19	20 →	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5

© Calendar-12.com

October 2019

November 2019

Su	Mo	Tu	We	Th	Fr	Sa
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
29	30	1	2	3	4	5 Severe cold/flu Sleep disturbing
6	7	8 Symptoms improve to mild	9	10	11	12
13	14 whole family Nausea/vomiting/ diarrhea	15	16	17	18	19
20	21	22 whole family Nausea/vomiting/ diarrhea	23	24 mild cold/flu	25	26
27	28	29	30	31	1	2

© Calendar-12.com

December 2019

Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4

November 2019

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
27	28	29	30	31	1	2
3	4	5	6	7	8 [REDACTED] mild cold/flu	9 →
10 →	11 →	12	13	14	15	16
17	18	19 [REDACTED] Nausea/Vomiting	20 →	21 →	22 [REDACTED] Symptoms worsen	23 →
24 →	25 Whole family Nausea/Vomiting/ diarrhea	26 →	27	28	29	30 →

© Calendar-1.2.com

December 2019

January 2020

Su	Mo	Tu	We	Th	Fr	Sa
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	1

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2 Abby mild cold/flu	3	4	5	6	7
8	9	10	11	(12) Approximately Hannah/Aaron severe sleep disturbances	13	14
15	16	17 Abby / Hope Nausea / Diarrhea	18	19 Persist until mid- January	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4

February 2020

Su	Mo	Tu	We	Th	Fr	Sa
26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

January 2020

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18 Abby Nausea/Diarrhea →
19 →	20	21	22	23	24	25
26	27	28	29	30	31 Abby Nausea/Diarrhea →	1 → © Calendar-12.com

February 2020

March 2020

Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
26	27	28	29	30	31	1 →
2 →	3 Abby Symptoms worsen severe Nausea/ vomiting/diarrhea	4 Abby Symptoms improve slightly	5 Abby Symptoms worsen again	6 Abby Symptoms improve	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29 © Calendar-12.com

**EXHIBIT 6 TO AFFIDAVIT OF HANNAH MCMAHON IN SUPPORT OF
STANDING**



Windheim EMF

SOLUTIONS

Less EMF ■ Better Health ■ Live Longer

Eric Windheim, BA, BBEC, EMRS

Certified Building Biology Environmental Consultant & Certified Electromagnetic Radiation Specialist

e.windheim@comcast.net <http://www.windheimemfsolutions.com>

Sacramento, Ca. 916-395-7336

June 3, 2019

Aaron & Hannah McMahon
7597 Pocket Road
Sacramento CA, 95831

Dear Aaron, Hannah & family,

Preface: Our EMF testing is objective, informative and we are independent of industry and government. We detect and measure EMFs that others won't, due to policy, or can't, due lack of training or proper instruments and we show you the biologically precautionary and non-thermal risk levels reported in independently funded, peer reviewed reports that industry and government ignore.

The purpose of this letter & report is to provide you with my opinion about the levels, dangers and protective recommendations for the radio frequency radiation (RFR) exposure at the premises located at 7597 Pocket Road, Sacramento CA, 95831 the "Property"). I am pleased to provide you with my opinions on the matter.

By way of background, I am a Certified Building Biology Environmental Consultant (BBEC) and Certified Electromagnetic Radiation Specialist (EMRS) trained and certified by the International Institute for Building Biology and Ecology: <https://hbelc.org/>. I have completed the "Radio Frequency Safety Officer Course" (RFSO) accredited by the Institute of Electrical and Electronics Engineers, Inc. (IEEE): <https://www.ieee.org/education/certificates/index.html>. My experience includes consulting to detect, measure, and determine biological risk levels in residential and low-rise commercial buildings and to provide written assessments, reports and effective solutions that reduce EMF exposure for homeowners, developers, medical doctors, municipalities, school districts, firefighter unions, housing corporations, real-estate development companies, large electrical and general building contractors and high-tech Semiconductor companies. Further, I have significant training in the use of precision instruments that measure all EMFs including radio frequency radiation (RFR). I have designed and supervised installation of highly effective RFR shielding systems of up to 40,000 square feet in shield size. Attached are my credentials, back ground and bio that provides a more detailed background about my education and experience: Exhibit 17.

I see clients in all stages of acute symptomology, pain, suffering, disfunction, injury and chronic health decline from RFR exposure ranging from mild headaches, fatigue, restless sleep, ringing in the ears,

AD_00217

cognitive disability to debilitating insomnia, endocrine disorders, blood pressure spikes, cardiac problems, emergency hospital visits, depression, suicidal thoughts and delusional psychosis. Many clients experience rapid or complete recovery when the RFR exposure is reduced, eliminated by removing the source of the RFR or by moving away from it. This is also observed in published studies from around the world (Exhibit 7). I find that immediate reduction or avoidance of RFR exposure is the key to symptom relief and recovery. Once you are traumatized by chronic RFR exposure, your health, mental, physical, social relations and financial stability can deteriorate significantly. Some clients never recover completely and they are never the same as they were before exposure.

I examined, measured and tested your Property on March 28 through April 1 2019 and also on April 7 2018. ***It was noted that there is a Verizon small cell omnidirectional cannister antenna on the top of the city owned lamp pole, SLT-07551, 60 feet from your second story bedroom window for the bedroom of your two young daughters.***

To obtain useful RFR sampling of data, I recorded RFR measurements at a number of points both inside and outside your home. During my tests there were no WIFI or cell phones operating in your home: all other sources of RFR were from nearby homes, distant cell towers and insignificant by comparison. *I deployed an HF-59B RFR meter built by Gigahertz Solutions and in the factory calibration period.* See (Exhibit 13) for methodology, meters and meter settings.

The highest and most hazardous RFR level was measured in your second story children's bedroom: 60 feet from the antenna. The RFR power density levels were up to 460,000 $\mu\text{W}/\text{m}^2$ which is 460x above the Extreme Concern level of SBM-2015 (Exhibit 1&4). The second story master bedroom, at the back of the house and farthest from the antenna, measured 16,000 $\mu\text{W}/\text{m}^2$ (Exhibit 4). The second story office bedroom measured 13,000 $\mu\text{W}/\text{m}^2$. Significantly, these levels are 460x, 16x, and 13x *above* the "Extreme Concern" level according to SBM-2015 for sleeping areas. (Exhibit 1 & 4).

These RFR levels indicate a very significant health hazard and danger based on current scientific principles of risk for acute symptoms, illness and long-term disease (Exhibits 5, 6, 11).

It is well documented that the health consequences resulting from such significant RFR exposure include, but are not limited to moderate to severe sleep problems, tinnitus, chronic fatigue, headaches, concentration, memory, learning and immune system problems, heart palpitations, nausea, joint pain, swelling of face and neck, eye problems, rashes, and cancer. In your case, the

levels of RFR exposure are extremely elevated and present a danger and hazard to both family members and visiting guests (Exhibits 5, 6, 11).

Contrary to information provided by the wireless industry, the Federal Communications Commission (FCC) and non-governmental organizations friendly to the wireless industry, there is very substantial evidence for adverse neurological symptoms and other non-thermal chronic health damage due to non-ionizing RFR radiation at levels several orders of magnitude lower than current FCC guidelines and actually much lower than you are being continuously exposed to in your own home (Exhibit 6B).

Please note that the FCC MPE public exposure thermal limit testing is not done on real live people but rather on liquid filled plastic manikins the size and shape of a 200-pound man or head alone.

It is very important to realize that the FCC MPE public exposure limit only provides protection from deep core body heating in excess of 1°C (1.8°F) as time averaged over 30 minutes and does not consider acute neurological symptoms, non-thermal or chronic health damage due to long term exposure to RFR at your measured power density levels and as reported in independently funded, peer-reviewed scientific papers from around the world. (Exhibits: 5, 6, 6B, 7, 8, 9, 10 & 11)

As Joel Moskowitz, PhD, Director of Public Health at UC Berkeley (Exhibit 16) has stated, *"Federal regulations protect the public only from the thermal (i.e., heating) risk due to short-term exposure to high intensity, cell tower radiation. The Federal regulations ignore the hundreds of studies that find harmful bio-effects from long-term exposure to non-thermal levels of cell phone radiation. The Telecommunications Act of 1996 does not allow communities to stop the siting of cell towers for health reasons. Nevertheless, landlords may be liable for any harm caused by cell phone radiation emitted by towers situated on their property..."*

The City of Sacramento (COS) lamp pole SLT-07551, paid for with your tax dollars, is supporting the Verizon wireless transmission facility (WTF) that is radiating your private home and property thus making the COS a possible accessory to and facilitator of your toxic RFR exposure event. At the very least, the location of this Verizon wireless transmission facility (WTF) is a public nuisance similar to COS Health and Safety Codes 8.68, Noise and 8.72 Searchlights. Excess daytime noise, noise at nighttime hours or searchlights beamed into a house can disrupt sleep, peace and tranquility and are prohibited by COS Health and Safety Codes. In the same manner the high intensity RFR beamed directly into your house from the WTF antenna, supported by the COS lamp pole, is a documentable

and probable cause of sleep disruption and many other acute neurological symptoms, pain, suffering, and injury from chronic RFR exposure at your measured RFR power density levels and lower.

It is my opinion that this Verizon antenna represents thoughtless site selection, lack of normal precaution and review, disregard for human health and safety, “public nuisance” and possibly “reckless endangerment” or “child endangerment” as defined by law (Exhibit 12).

Due to the extremely high RFR exposure measurements it appears that your children’s second story bedroom is getting direct beam RFR rather than ancillary bottom lobe RFR from the antenna as is measured below and near the pole at much lower levels (Exhibit 3). According to the RFR Compliance Report (RFCR) supplied to me by the COS, this cell antenna is putting your children’s bedroom window directly in, or very close to the center of the main RFR beam of the Verizon cell antenna radiation beam which can be likened to a focused searchlight beam aimed at your house, and most tragically, into the second story window and bedroom of your two young daughters. This Verizon WTF antenna should never have been deployed in-front of a two-story house at a distance of only 60 feet. Deficiencies in the RFCR will be covered below.

There is a direct relationship between distance from the cell tower and the incidence, variety and intensity of symptoms and higher mortality. Close to cell towers there are many neurological symptoms, injuries, disorders, cancers and higher death rates and further away there is much less (Exhibits 8-11). “*Significant Reduction in Clinical Symptoms After Transmitter Removal*” were found in the Japanese’s study. (Exhibit 7). The RFR cell tower exposure in all of these studies is far less than you and your family are exposed to continuously: every night and day.

It is my understanding, based on our phone conversations, face to face meeting and your attached declarations (Exhibit 14) which states that the symptoms (none of which they had before) of your daughters and father commenced as soon as the Verizon antenna was operational, with the main symptoms listed being restless sleep, severe headaches, persistent cough, nightmares, night sweats, physical and mental discomfort, anxiety, clinical depression and panic attacks. I further understand that your father receives a headache within 45 minutes of arrival at your Property, feels worse whenever he is outside or opens the bedroom window and he feels better only after he leaves your Property. In my opinion, my findings of extremely high RFR power densities provide a clear explanation for the symptoms associated with “radio wave sickness” that are impossible for your families to avoid experiencing at your Property and your symptoms are a direct result of exposure to

The RF Compliance Report (RFCR), accepted by the COS, has critical deficiencies as listed below:

1. Failure to state the % of the FCC MPE or the actual RFR power density at the level of second story bedrooms at 60 feet distance. This is a critical deficiency. Ask for actual RFR power densities at 18' AGL at distances of 50', 100', 150', 200', 250', 300', 350', 400', 450' and 500'.
2. Down-tilt angle of the antenna(s) is not specified. Ask for this.
3. Vertical antenna beam width and beam angle is not clearly specified. Ask for this.

The RFCR states that RFR power density at 6' feet above ground and 20' from the pole could be as high 3,850,000 $\mu\text{W}/\text{m}^2$: I measured only 55,000 $\mu\text{W}/\text{m}^2$ at this location (Figure 2), which indicates several things:

1. This Verizon WTF has enormous reserves of radiating capacity not currently in use, but on tap for future use, due to the power and sizing of the RFR transmitters and antennas installed.
2. My current measurements of 55,000 $\mu\text{W}/\text{m}^2$ are about 1/70th of the RFCR stated maximum of 3,850,000 $\mu\text{W}/\text{m}^2$ at 6' above ground and 20' from the pole.
3. This WTF is currently operating at approximately 1/70th of its potential maximum capacity.
4. If this WTF increases its radiating output by 70X you very well could see the RFR power densities levels that exceed FCC MPE public limits inside your home.

This is exactly why you must obtain the calculated RFR power density level at your children's bedroom window in the form of an officially revised and newly dated RFCR.

You may be wondering, as I am also:

1. Why did the RFCR state FCC compliance measurements only at 6' AGL, 20' from the pole when RFR power density is clearly higher at chest level 40' from the pole and at second story windows 60' from the pole?
2. Why did the RFCR fail to list RFR power density at your second story bedroom window? Without this there is no basis for the FCC, the RFCR or the COS to make a positive assertion of safety from radiated RFR power levels that your family is perpetually exposed to.
3. How did this critical deficiency get past the COS, get permit approval and result in installation and operation of this WTF 60' in front of your second story children's bedroom?

4. Why is the COS allowing installation of WTFs with RFR transmission equipment having power and capacity that could greatly exceed FCC MPE legal limits inside your home?
5. Why was this WTF built with such excess potential power: is this to meet future demand?
6. When, if ever, would the FCC or the COS require RF power density measurements be calculated, or measured on site, at your children's second story bedroom window or bed?
7. Where is the independent, onsite compliance investigator and who is responsible for doing it?
8. How many other RFR Extreme Concern over exposure events, like yours, are occurring in Sacramento right now? How many more such events will be created in the future?

Based on my background, training and experience, it is my professional opinion that:

1. Your measured levels of RFR are highly toxic, hazardous and dangerous for all residents, guests and pets at your home. As demand for wireless service from this Verizon small cell antenna WTF increases so will your RFR exposure, variety of symptoms, intensity of symptoms and the number of people in your family that will become symptomatic. See Santini et al (France) (Exhibits 5-11).
2. The health symptoms that you report are consistent with exposure to Extreme Concern levels of non-ionizing RFR. Independently funded, peer reviewed studies worldwide show the same constellation of symptoms relative to cell tower proximity and RFR power density levels that are lower than your exposure. Close proximity shows a high incidence, severity and variety of neurobehavioral symptoms and distant proximity shows much less incidence, severity and less variety of symptoms. See Santini et al (France) in the attached (Exhibits 5-11).
3. It is impossible for your family or guests to avoid experiencing these reported symptoms so long as you live at this Property or the Verizon WTF is operational unless you invest in extensive and very expensive RFR shielding. Please note that when a person is exposed to such an extreme and continuous dose of RFR within the home, especially during the very critical sleep time, there is very little hope of relief or recovery as long as the exposure exists. People can't stay well, much less get well living in this level of RFR exposure. The enormous intensity and relentless 24 hour per day exposure to the RFR at this Property makes it a very urgent reason to avoid or stop additional exposure by rapid administrative or legal action with the COS, shielding your house walls, ceilings and windows or acquiring quality RFR bed canopies or by moving to a new home with far less RFR exposure.

4. The RFCR is critically deficient: it lists human exposure to RFR power density exposure only at 20 feet from the pole and at 6' above ground level where the RFR power density is very, very low compared to your second story children's bedroom window and bed which is in or close to the main RFR beam.. There is no RFR power density exposure stated for second story bedrooms at 60' from the Verizon small cell antenna WTF. This very serious omission in the RFCR that could have been revealed and corrected in a required due diligence review of the RFCR by COS before the building permit was issued and the Verizon small cell antenna WTF was allowed, by the COS, to be constructed and operational.

5. The Verizon small cell antenna and WTF is apparently now operating at about only 1/70th of its stated maximum design capacity and RFR power density could increase drastically by as much as 70 times higher as more Verizon subscribers and users demand more text, voice, video, wireless broadband and data service etc. during the coming months and years. It is very important to ask yourself how much longer can you and your family can endure this and what are you willing to do to effectively protect yourselves.

6. Effective and proven shielding solutions for drastically reducing your RFR cell tower radiation exposure *indoors* is available. See Exhibit 15 . If installed at your home the cost could be \$12,000 to \$20,000 and only protect residents when they are *indoors*. Wall and window RFR shielding on the front of your house will effectively reflect RFR back toward your front yard, driveway and walkway to your front door and actually raise RFR power density levels at those locations.

The opinions expressed in this report are made within a reasonable degree of professional certainty.

Sincerely,



Eric Windheim BA, EMRS, BBEC

Certified Electromagnetic Radiation Specialist

Certified Building Biology Environmental Consultant

Windheim EMF Solutions

Exhibit 1: 420,000 $\mu\text{W}/\text{m}^2$ measured at the window of girl's 2nd story bedroom is 420 times above the Extreme Concern level for sleeping areas per SBM-2015. Measurements were up to 460,000 $\mu\text{W}/\text{m}^2$ at this window. This is the highest RFR I have ever measured in a bedroom.

The Verizon small cell antenna can be seen at a 60' distance.

This children's bedroom has been vacated due to the following symptoms since the antenna went operational.

Children's symptoms:

1. Restless sleep
2. Headaches
3. Persistent cough

Robert McMahon's symptoms:

1. Severe headaches
2. Nightmares
3. Night Sweats
4. Physical & mental discomfort
5. Unable to sleep
6. Symptoms start when he arrives at the Property and stop after he leaves

Please see Exhibit 14 for sworn declarations of the above symptoms.

Sacramento City Codes: 8.68, Noise and 8.72, Searchlights would stop, and or, fine operators that were *causing such disruption of health, safety and human comfort*.



Figure 1: Verizon cell antenna viewed from children's bedroom

See link. <http://www.qcode.us/codes/sacramento/view.php?topic=8&frames=on>

- A. Searchlights shall not be operated so as to constitute a traffic hazard or a **nuisance**.
- B. Searchlights shall be operated so as to **avoid directing the beam at any building**.

It is my professional opinion that this Verizon small cell antenna, *is causing disruption of health, safety and human comfort* equal to or greater than excessive or untimely noise or directed searchlights and also is causing many more acute neurological symptoms (Exhibit 5).

Exhibit 2: RFR power density exposure increases with elevation above ground level.

Figure 2: Home viewed from across Pocket Road. RFR power density levels increase drastically with height above ground

Images at the right are the side view of vertical RFR beam distribution patterns of the Verizon small cell antennas in the RFCR. As you can see, most but not all RFR goes out horizontally and possibly down with antenna tilt (not specified in the RFCR). While very little RFR is directed down to the ground near the pole, that is where RFCR calculates the FCC MPE compliance. The second story children's bedroom is not considered by the RFCR: this is a glaring deficiency. The children's bedroom is in or very close to the main RFR beam at 460,000 $\mu\text{W}/\text{m}^2$ while the sidewalk is much lower at 55,000 $\mu\text{W}/\text{m}^2$ to 82,000 $\mu\text{W}/\text{m}^2$. The RFCR is severely deficient because it does not predict the RFR power density at nearby second story bedrooms where children sleep.

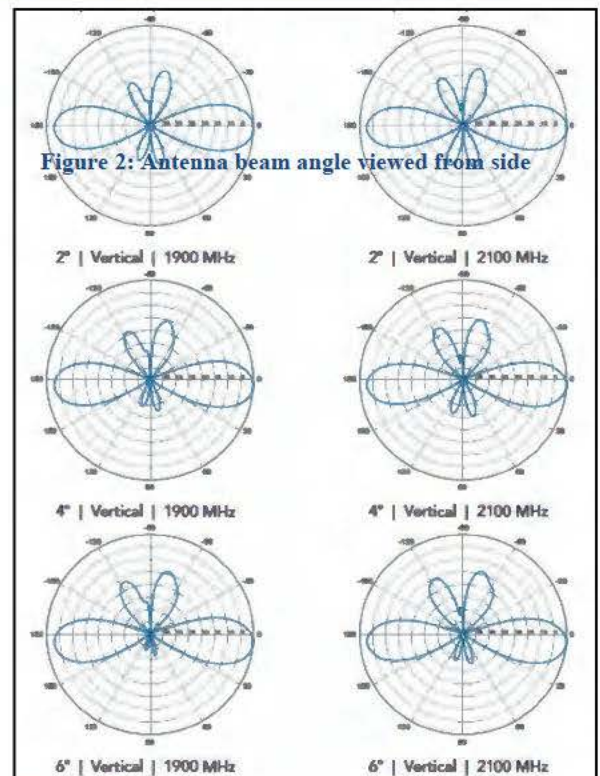


Figure 3: Vertical antenna beam angle viewed from side

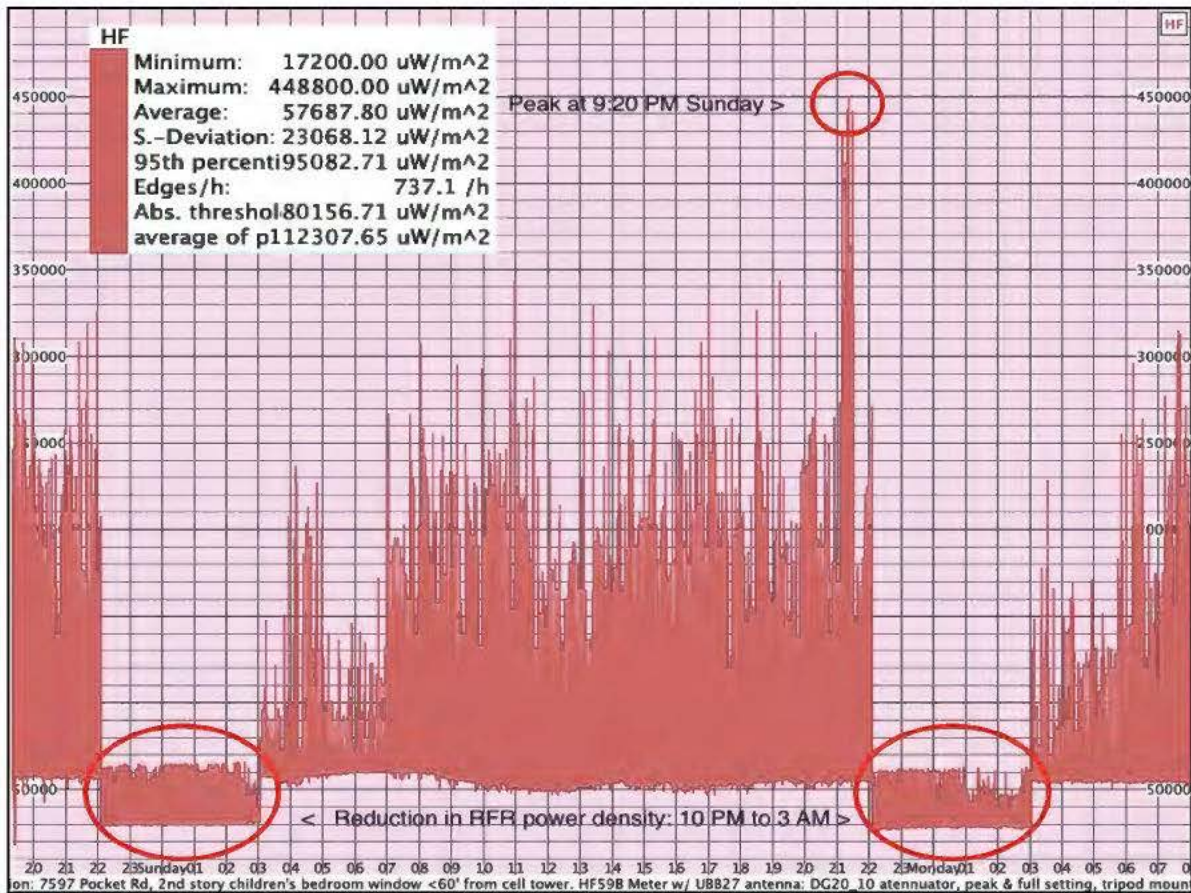


Figure 4: RFR power density data log at window

Data logging set up in children's second story bedroom. Verizon small cell antenna in picture is 60' away at sidewalk. RFR Power density increases with moment by moment user demand and the inevitable increase in user demand over months and years.

A data log is the best way to see the rise and fall of RFR power density over time: it can be likened to a seismograph chart revealing the intensity and duration of an earthquake. There are daily patterns of both high and low RFR traffic similar to traffic patterns on the freeway.

If this Verizon antenna continues to operate data logs can be taken at regular monthly and yearly intervals to show the increase RFR Power density resulting from increasing user demand. Verizon has stated that there is an ever-increasing demand for wireless service.

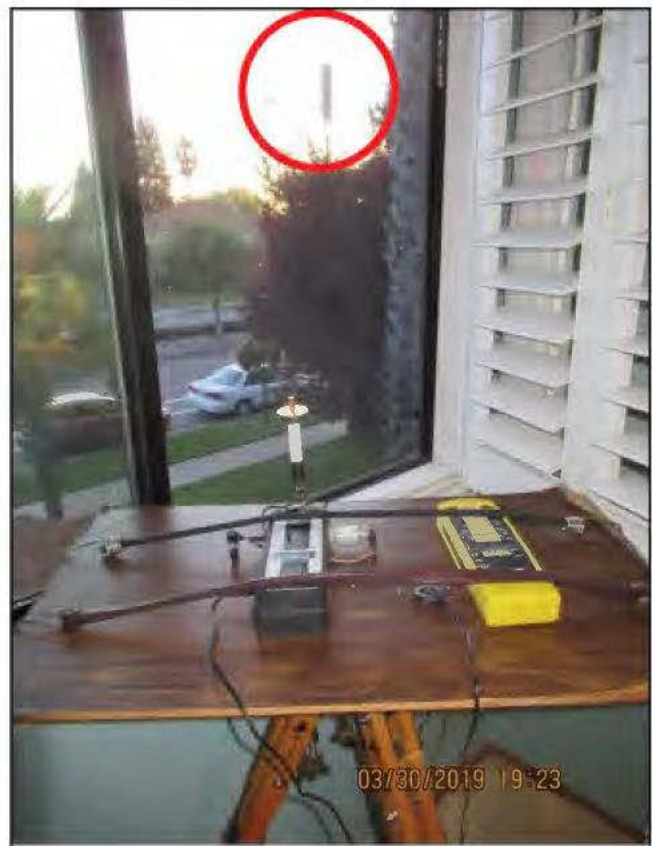


Figure 5: Data log meter setup at window

Exhibit 4: Table of locations and "Peak Hold" RFR power density levels measured and hazard levels per Building Biology Precautionary Guidelines (SBM-2015) for sleeping areas.

Location All measurements taken at chest level unless otherwise noted below.	Wireless Radiation $\mu\text{W}/\text{m}^2$ MicroWatts/Sq. Meter HF59B meter UBB27 Antenna	Wireless Radiation $\mu\text{W}/\text{cm}^2$ MicroWatts/Sq. Centimeter HF59B meter UBB27 Antenna	Wireless Radiation mW/cm^2 MilliWatts/Sq. Centimeter HF59B meter UBB27 Antenna	Multiple of Building Biology Precautionary Guideline SBM-2015 Extreme Concern Level
	<0.1 No Concern .1-10 Slight 10-1,000 Severe >1,000 Extreme	<0.00001 No Concern .00001-.001 Slight .001-0.1 Severe >0.1 Extreme	<0.00000001 No Concern .00000001-.000001 Slight .000001-.0001 Severe >.0001 Extreme	
20' from pole, 6' above sidewalk	55,000	5.5	.0055	
40' from pole on Driveway at sidewalk	82,000	8.2	.0082	
Top of stairs indoors	38,000	3.8	.0038	
2 nd story desk in office bedroom	13,000	1.3	.0013	13x
On Master bed 2 nd story	16,000	1.6	.0016	16x
On Children's bed in 2 nd story bedroom	176,000	17.6	.0176	176x
Children's 2 nd story bedroom window	460,000	46	.046	460x
Living room 1 st floor	5,700	.57	.00057	
Dining room 1 st floor	5,800	.58	.00058	
Family room 1 st floor	2,600	.26	.00026	
Kitchen table 1 st floor	1,000	.1	.00010	

Table 1: Spot RFR power density measurements

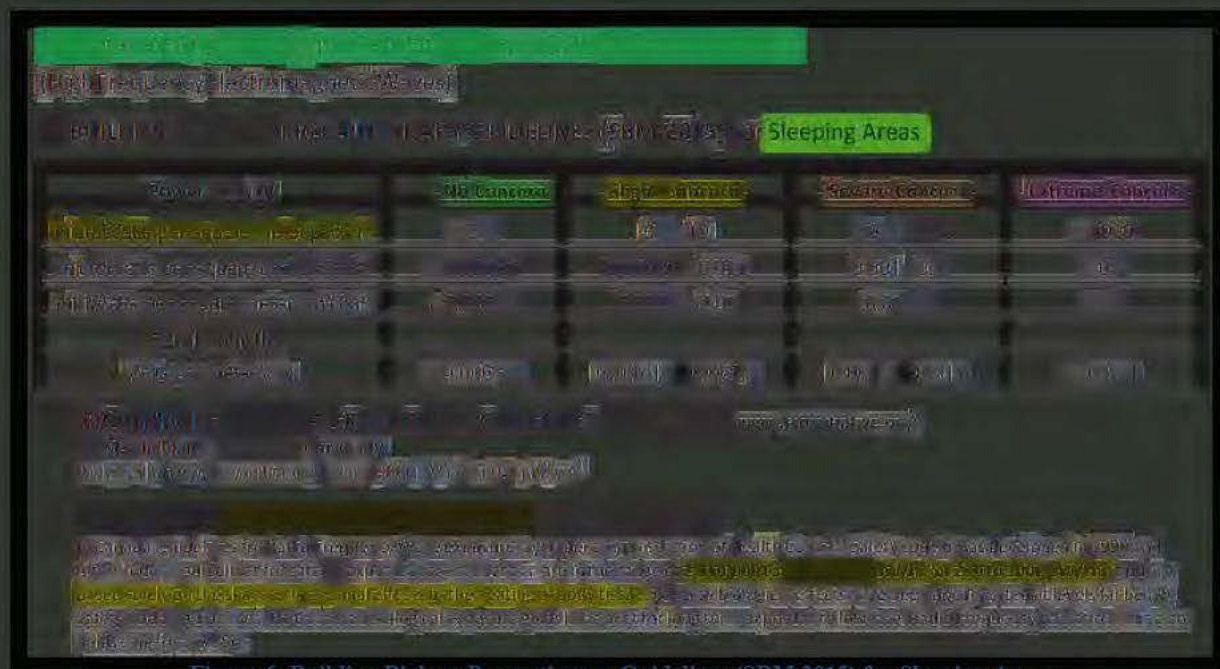


Figure 6: Building Biology Precautionary Guidelines (SBM 2015) for Sleeping Areas

Exhibit 5: Neurobehavioral Symptoms near Cell Towers, Santini et al (France)



Exhibit 6: Bioinitiative Report 2012: color charts of peer-reviewed studies correlating RFR power density levels to acute symptoms and chronic injury.



BioInitiative 2012

A Rationale for Biologically-based Exposure Standards for Low-Intensity Electromagnetic Radiation

BioInitiative Working Group 2012

Jitendra Behari, PhD, India
Paulraj Rajamani, PhD, India
Carlo V. Bellieni, MD, Italy
Igor Belyaev, Dr.Sc., Slovak Republic
Carl F. Blackman, PhD, USA
Martin Blank, PhD, USA
Michael Carlberg, MSc, Sweden
David O Carpenter, MD, USA
Zoreh Davanipour, DVM, PhD USA
Adamantia F. Fragopoulou, PhD, Greece
David Gee, Denmark
Yuri Grigoriev, MD, Russia
Kjell Hansson Mild, PhD, Sweden
Lennart Hardell, MD, PhD, Sweden
Martha Herbert, PhD, MD, USA

Paul Héroux, PhD, Canada
Michael Kundi, PhD, Austria
Henry Lai, PhD, USA
Ying Li, PhD, Canada
Abraham R. Liboff, PhD, USA
Lukas H. Margaritis, PhD, Greece
Henrietta Nittby, MD, PhD, Sweden
Gerd Oberfeld, MD, Austria
Bertil R. Persson, PhD, MD, Sweden
Iole Pinto, PhD, Italy
Cindy Sage, MA, USA
Leif Salford, MD, PhD, Sweden
Eugene Sobel, PhD, USA
Amy Thomsen, MPH, MSPAS, USA

Cite this report as: BioInitiative Working Group, Cindy Sage and David O. Carpenter, Editors.
BioInitiative Report: A Rationale for a Biologically-based Public Exposure Standard for Electromagnetic Radiation at
www.bioinitiative.org, December 31, 2012

Copyright ©2012 Cindy Sage and David O. Carpenter - Editors. All Rights Reserved

Reported Biological Effects from Radiofrequency Radiation at Low-Intensity Exposure (Cell Tower, Wi-Fi, Wireless Laptop and 'Smart' Meter RF Intensities)

Power Density (Microwatts/centimeter ² - uW/cm ²)	Reference
As low as (10 ⁻¹³) or 100 femtowatts/cm ²	Belyaev, 1997
5 picowatts/cm ² (10 ⁻¹²)	Grundler, 1992
0.1 nanowatt/cm ² (10 ⁻¹⁰) or 100 picowatts/cm ²	Belyaev, 1997
0.00034 uW/cm ²	Behari, 2006
0.0005 uW/cm ²	Velizarov, 1999
0.0006 - 0.0128 uW/cm ²	Oberfeld, 2004
0.003 - 0.02 uW/cm ²	Heinrich, 2010
0.003 to 0.05 uW/cm ²	Thomas, 2010
0.005 uW/cm ²	Mohler, 2010
0.005 - 0.04 uW/cm ²	Thomas, 2008
0.006 - 0.01 uW/cm ²	Buchner, 2012
0.01 - 0.11 uW/cm ²	Navarro, 2003

Stress proteins, HSP, disrupted immune function	Brain tumors and blood-brain barrier
Reproduction/fertility affects	Sleep, neuron firing rate, EEG, memory, learning, behavior
Oxidative damage/ROS/DNA damage/DNA repair failure	Cancer (other than brain), cell proliferation
Disrupted calcium metabolism	Cardiac, heart muscle, blood-pressure, vascular effects

Reported Biological Effects from Radiofrequency Radiation at Low-Intensity Exposure (Cell Tower, Wi-Fi, Wireless Laptop and 'Smart' Meter RF Intensities)

Power Density (Microwatts/centimeter ² - uW/cm ²)	Reference
0.5 uW/cm ²	Significant degeneration of seminiferous epithelium in mice at 2.45 GHz, 30-40 min. Saunders, 1981
0.5 - 1.0 uW/cm ²	Wi-Fi level laptop exposure for 4-hr resulted in decrease in sperm viability, DNA fragmentation with sperm samples placed in petri dishes under a laptop connected via Wi-Fi to the internet. Avendano, 2012
1.0 uW/cm ²	RFR induced pathological leakage of the blood-brain barrier Persson, 1997
1.0 uW/cm ²	RFR caused significant effect on immune function in mice Fesenko, 1999
1.0 uW/cm ²	RFR affected function of the immune system Novoselova, 1999
1.0 uW/cm ²	Short-term (50 min) exposure in electrosensitive patients, caused loss of well-being after GSM and especially UMTS cell phone radiation exposure Eltiti, 2007
1.3 - 5.7 uW/cm ²	RFR associated with a doubling of leukemia in adults Dolk, 1997
1.25 uW/cm ²	RFR exposure affected kidney development in rats (in-utero exposure) Pyrsapoulou, 2004
1.5 uW/cm ²	RFR reduced memory function in rats Nittby, 2007
2 uW/cm ²	RFR induced double-strand DNA damage in rat brain cells Kesani, 2008
2.5 uW/cm ²	RFR affected calcium concentrations in heart muscle cells Wolke, 1996
2 - 4 uW/cm ²	Altered cell membranes; acetylcholine-induced ion channel disruption D'Inzeo, 1988
4 uW/cm ²	RFR caused changes in hippocampus (brain memory and learning) Tattersall, 2001
4 - 15 uW/cm ²	Memory impairment, slowed motor skills and retarded learning in children Chiang, 1989
5 uW/cm ²	RFR caused drop in NK lymphocytes (immune function decreased) Boscolo, 2001
5.25 uW/cm ²	20 minutes of RFR at cell tower frequencies induced cell stress response Kwee, 2001
5 - 10 uW/cm ²	RFR caused impaired nervous system activity Dumansky, 1974
6 uW/cm ²	RFR induced DNA damage in cells Phillips, 1998

Stress proteins, HSP, disrupted immune function	Brain tumors and blood-brain barrier
Reproduction/fertility effects	Sleep, neuron firing rate, EEG, memory, learning, behavior
Oxidative damage/RCS/DNA damage/DNA repair failure	Cancer (other than brain), cell proliferation
Disrupted calcium metabolism	Cardiac, heart muscle, blood-pressure, vascular effects

Reported Biological Effects from Radiofrequency Radiation at Low-Intensity Exposure (Cell Tower, Wi-Fi, Wireless Laptop and 'Smart' Meter RF Intensities)

Power Density (Microwatts/centimeter ² - uW/cm ²)	Reference
8.75 uW/cm ²	RFR at 900 MHz for 2-12 hours caused DNA breaks in leukemia cells Marinelli, 2004
10 uW/cm ²	Changes in behavior (avoidance) after 0.5 hour exposure to pulsed RFR Navakatikian, 1994
10 - 100 uW/cm ²	Increased risk in radar operators of cancer; very short latency period; dose response to exposure level of RFR reported. Richter, 2000
12.5 uW/cm ²	RFR caused calcium efflux in cells - can affect many critical cell functions Dutta, 1989
13.5 uW/cm ²	RFR affected human lymphocytes - induced stress response in cells Sarimov, 2004
20 uW/cm ²	Increase in serum cortisol (a stress hormone) Mann, 1998
28.2 uW/cm ²	RFR increased free radical production in rat cells Yurekli, 2006
37.5 uW/cm ²	Immune system effects - elevation of PFC count (antibody producing cells) Veyret, 1991
45 uW/cm ²	Pulsed RFR affected serum testosterone levels in mice Forgacs, 2006
50 uW/cm ²	Cell phone RFR caused a pathological leakage of the blood-brain barrier in 1 hour Salford, 2003
50 uW/cm ²	An 18% reduction in REM sleep (important to memory and learning functions) Mann, 1996
60 uW/cm ²	RFR caused structural changes in cells of mouse embryos Somozy, 1991
60 uW/cm ²	Pulsed RFR affected immune function in white blood cells Stankiewicz, 2006
60 uW/cm ²	Cortex of the brain was activated by 15 minutes of 902 MHz cell phone Lebedeva, 2000
65 uW/cm ²	RFR affected genes related to cancer Ivaschuk, 1999
92.5 uW/cm ²	RFR caused genetic changes in human white blood cells Belyaev, 2005
100 uW/cm ²	Changes in immune function Elekes, 1996
100 uW/cm ²	A 24.3% drop in testosterone after 6 hours of CW RFR exposure Navakatikian, 1994
120 uW/cm ²	A pathological leakage in the blood-brain barrier with 915 MHz cell RF Salford, 1994

Stress proteins, HSP, disrupted immune function	Brain tumors and blood-brain barrier
Reproduction/fertility effects	Sleep, neuron firing rate, EEG, memory, learning, behavior
Oxidative damage/RCS/DNA damage/DNA repair failure	Cancer (other than brain), cell proliferation
Disrupted calcium metabolism	Cardiac, heart muscle, blood-pressure, vascular effects

Exhibit 7: Shirjiyo, A. & Shirjiyo, A. (2014). Significant Reduction in Clinical Symptoms After Transmitter Removal: An Intervention Study
Reported Biological Effects from Radiofrequency Radiation at Low-Intensity Exposure (Cell Tower, WiFi, Wireless Laptop and 'Smart' Meter RF Intensities)

Power Density (Microwatts/centimeter ² - uW/cm ²)	Reference
500 uW/cm ²	Intestinal epithelial cells exposed to 2.45 GHz pulsed at 16 Hz showed changes in intercellular calcium. Somozy, 1993
500 uW/cm ²	A 24.6% drop in testosterone and 21.2% drop in insulin after 12 hrs of pulsed RFR exposure. Navakatikian, 1994
STANDARDS	
530 - 600 uW/cm ²	Limit for uncontrolled public exposure to 800-900 MHz
1000 uW/cm ²	PCS STANDARD for public exposure (as of September 1, 1997)
5000 uW/cm ²	PCS STANDARD for occupational exposure (as of September 1, 1997)
BACKGROUND LEVELS	
0.003 uW/cm ²	Background RF levels in US cities and suburbs in the 1990s
0.05 uW/cm ²	Median ambient power density in cities in Sweden (30-2000 MHz)
0.1 - 10 uW/cm ²	Ambient power density within 100-200' of cell site in US (data from 2000)
	Mantply, 1997 Hamnerius, 2000 Sage, 2000

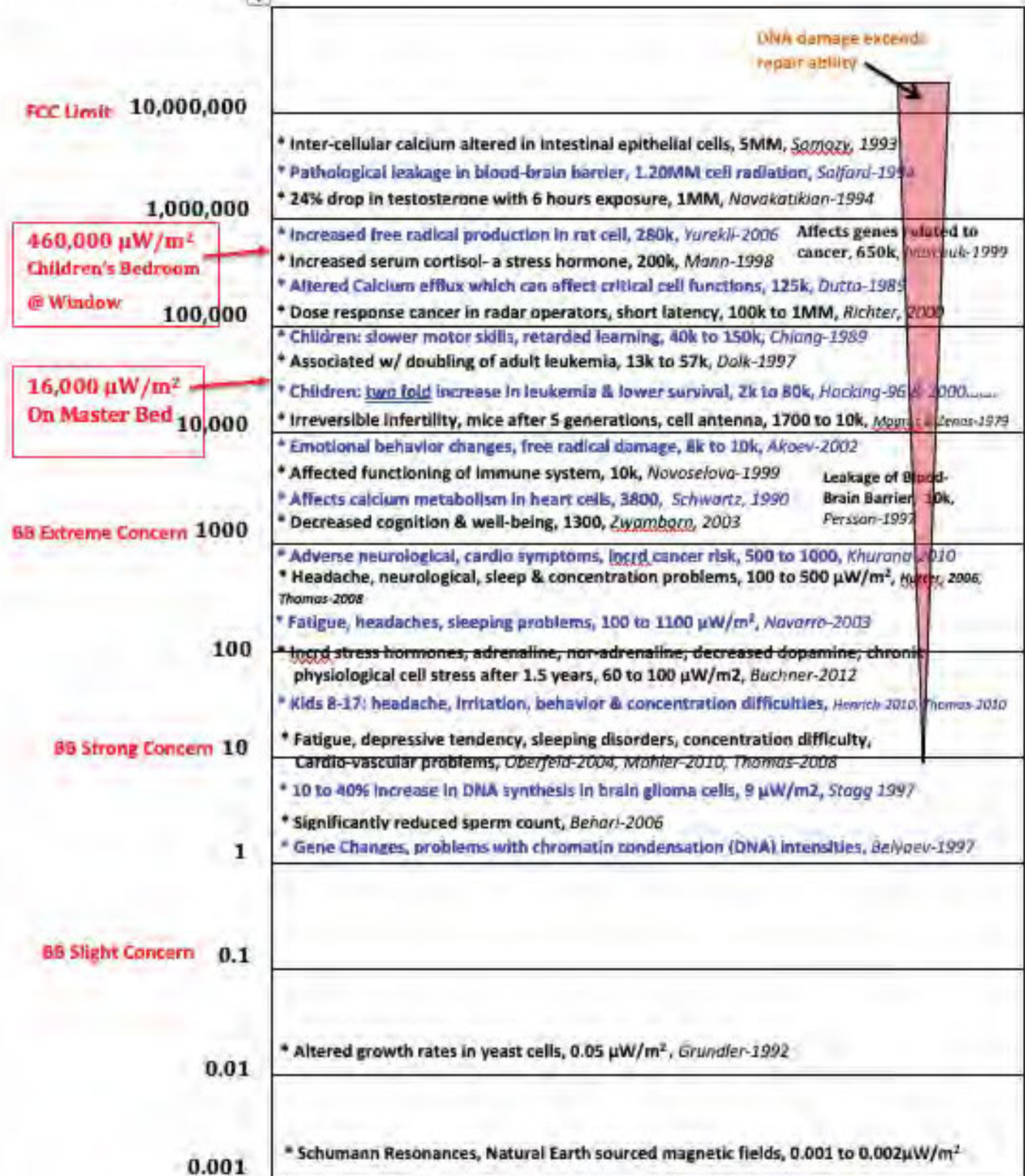
Stress proteins, HSP, disrupted immune function	Brain tumors and blood-brain barrier
Reproduction/fertility effects	Sleep, neuron firing rate, EEG, memory, learning, behavior
Oxidative damage/ROS/DNA damage/DNA repair failure	Cancer (other than brain), cell proliferation
Disrupted calcium metabolism	Cardiac, heart muscle, blood-pressure, vascular effects

Exhibit 6B:

Reported Biological Effects of RF Radiation

10

Power Density $\mu\text{W}/\text{m}^2$



Data from the 2012 BioInitiative Report, www.bioinitiative.org

BB: Building Biology Guidelines, www.buildingBiology.net

Exhibit 7: Shinjyo, T. & Shinjyo, A. (2014), Significant Reduction in Clinical Symptoms After Transmitter Removal - An Intervention Study. Environmental Medicine Society, 27 (4), pp. 294-301.



Figure 7: Rooftop cell antennas in study

Symptoms	Removal of the 800 MHz antennas		
	Before	After	P-value
Tinnitus	13	4	<0.05
Myodesopsia	7	2	>0.05
Arthralgia, shoulder stiffness	7	1	<0.05
Headache	5	1	>0.05
Hypertension	4	1	>0.05
Nasal bleeding	4	0	>0.05
Tumours (lymphoma, tongue cancer, bladder cancer)	3	1	>0.05
Insomnia, sleep problems, sleep disturbances	3	1	>0.05
Dizziness, vertigo	3	1	>0.05
Eye pain, ocular infection, dry eyes	3	0	>0.05
Astigmatism, deteriorated eyesight	2	0	>0.05
Palpitation (tachycardia), arrhythmia	2	0	>0.05
Tremor	1	1	>0.05
Glaucoma	1	0	>0.05
Hearing loss	1	0	>0.05
Rhinitis (nasal discharge)	1	0	>0.05
Otitis media	1	0	>0.05
Invertebral disc hernia	1	0	>0.05
Numbness	1	0	>0.05
Skin problems	1	0	>0.05
Angina pectoris	1	0	>0.05
Complex regional pain syndrome (CRPS)	1	0	>0.05
Total	66	13	

Table 3: Health comparison before and after the removal of the 800 MHz antennas. The statistical evaluation was carried out using Fisher's exact test and the chi-square test. Symptoms appearing during the operation of both the 800 MHz antennas and the 2 GHz antennas are printed in bold letters.



Figure 8: Rooftop cell antennas in study

Symptoms	Removal of the 2 GHz antennas		
	Before	After	P-value
Fatigue, loss of motivation	21	0	<0.01
Eye pain, ocular infection, dry eyes	14	0	<0.01
Insomnia, sleep problems, sleep disturbances	11	2	<0.01
Dizziness, vertigo, Menière's disease	11	0	<0.01
Jitteriness	11	0	<0.01
Astigmatism, deteriorated eyesight	10	6	>0.05
Headache	9	1	<0.01
Impaired consciousness	8	0	<0.01
Arthralgia, shoulder stiffness	7	3	>0.05
Tinnitus	7	1	<0.05
Nasal bleeding	6	0	<0.05
Palpitation (tachycardia), arrhythmia	5	2	>0.05
Numbness	5	0	<0.05
Dyspnoea, shortness of breath	3	1	>0.05
Tumours (colon polyp, vocal chord polyp)	3	0	>0.05
Skin problems	3	0	>0.05
Memory loss	3	0	>0.05
Hyperthyroidism and hypothyroidism	2	2	>0.05
Lack of concentration	2	0	>0.05
Hypertension	2	0	>0.05
Mental confusion	2	0	>0.05
Rhinitis (nasal discharge)	2	0	>0.05
Gastritis	2	0	>0.05
Cataract	1	0	>0.05
Angina pectoris	1	0	>0.05
Facial nerve palsy	1	0	>0.05
Facial flushing	1	0	>0.05
Sweating	1	0	>0.05
Taste disorder	1	0	>0.05
Hearing loss	1	0	>0.05
Slurred speech	1	0	>0.05
Drowsiness	1	0	>0.05
Total	158	18	

Table 4: Comparison of the symptoms appearing during and after operation of the 2 GHz antennas. The statistical evaluation was carried out using Fisher's exact test and the chi-square test. Symptoms appearing during the operation of both the 800 MHz antennas and the 2 GHz antennas are printed in bold letters.

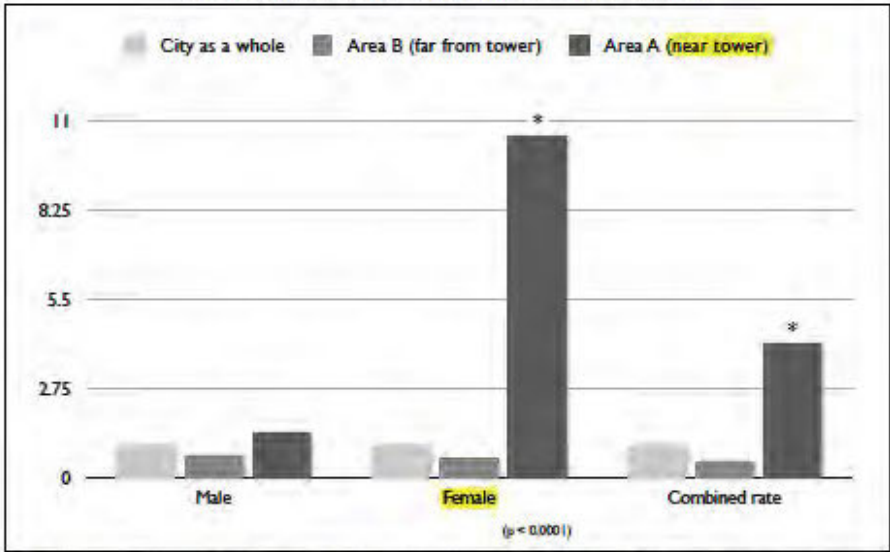
International Journal of Cancer Prevention (2004); 1(2): 1-19

Comments on Notice of Inquiry, ET Docket No. 13-84
Netanya, Israel (1997-1998)



New cell phone tower set up in city of Netanya, Israel, in July, 1996.
 1500 watt, 850 MHz.
 Power density in the whole exposed area was far below 0.53 $\mu\text{W}/\text{cm}^2$.
 This is 1000 times less than the FCC Guidelines of 600 $\mu\text{W}/\text{cm}^2$ for 850 MHz exposure.
 Comparison of cancer rates during the second year of exposure, in 877 long-term residents near the tower, compared to 1,222 matched controls living in another area of the city.
 Wolf R, Wolf D. Increased Incidence of Cancer Near a Cell-Phone Transmitter Station. *International Journal of Cancer Prevention* (2004); 1(2):1-19.

Netanya, Israel - Relative Cancer Risk



Relative risk of cancer in residents near a new cell phone tower in Netanya, Israel, during the second year of exposure.
 Overall risk of cancer in Area A was 4.15 times higher than in the town as a whole.
 For men in area A, the cancer rate was 1.4 times higher.
 For women in area A, the cancer rate was 10.5 times higher (p < 0.0001)
 [the probability of this being a random finding is one hundredth of 1%]
 Wolf R, Wolf D. Increased Incidence of Cancer Near a Cell-Phone Transmitter Station. *International Journal of Cancer Prevention* (2004); 1(2):1-19.

Exhibit 9: Comparison of cancer incidents in residents living within 400 meters of the cell phone tower, compared to residents living farther away. And compared to death rates for the province as a whole. See citation on image below.

Comments on Notice of Inquiry, ET Docket No. 13-84
Naila, Germany (1999-2004)



Town of ~ 1100 residents.

Cell tower installed in 1993.

Medical of 1000 residents reviewed for the years 1994-2004.

Comparison of cancer incidents in residents living within 400 meters of the cell phone tower, compared to residents living farther away, and compared to the death rates for the province as a whole.

Eger M, Hagen K, Lueser B, Vogel P, Voigt M. The Influence of Being Physically Near to a Cell Phone Transmission Mast on the Incidence of Cancer. *Umwelt-Medizin-Gesundheits* (2004); 17(4):1-7.

Cancer Incidence in Naila (1999-2004)

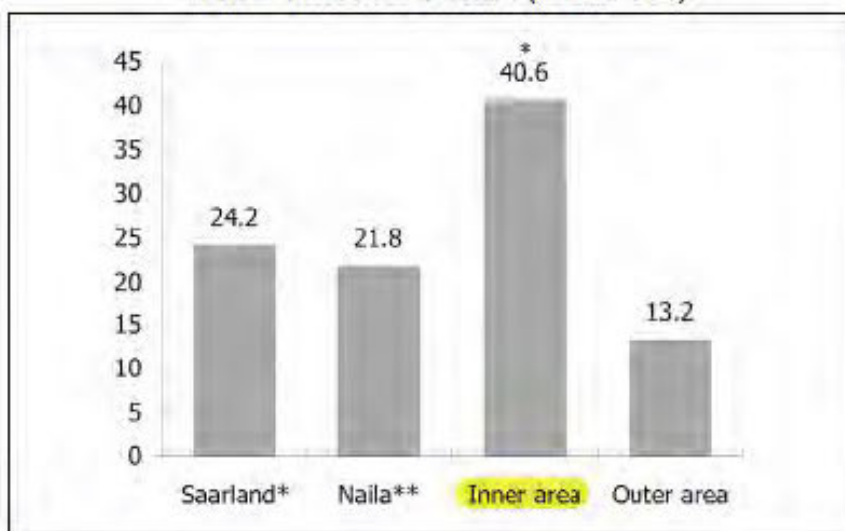


Fig. 3 : Number of new cancer cases 1999 to 2004, adjusted for age and gender, calculated for the 5,000 patient years.

Y axis: Cancer incidence 1994 - 2004 (new cases per 5000 patient years).

* Saarland = predicted rate based on the cancer registry for the federal state of Saarland.

** Naila = incidence for the town as a whole.

Inner area = residence within 400 meters of the tower.

Outer area = remainder of community.

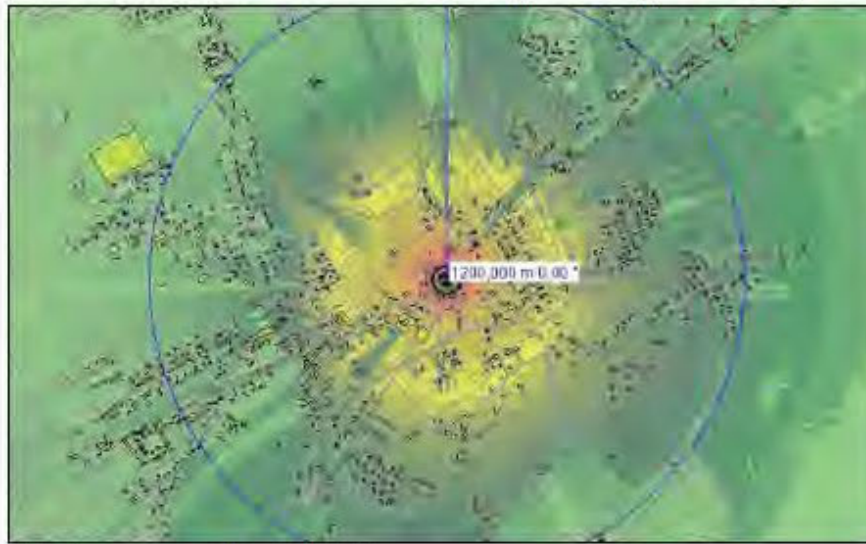
In the inner area, the risk of cancer incidence was three times as high after five or more years of exposure. In addition, the patients that live within 400 metres tend to develop the cancers at a younger age.

Exhibit 10: Case control study of cancer patients living within 1200-meter radius of the cell tower.

See citation on image below.

Comments on Notice of Inquiry, ET Docket No. 13-84

Hausmannstätten & Vasoldsberg, Austria (1984-1997)

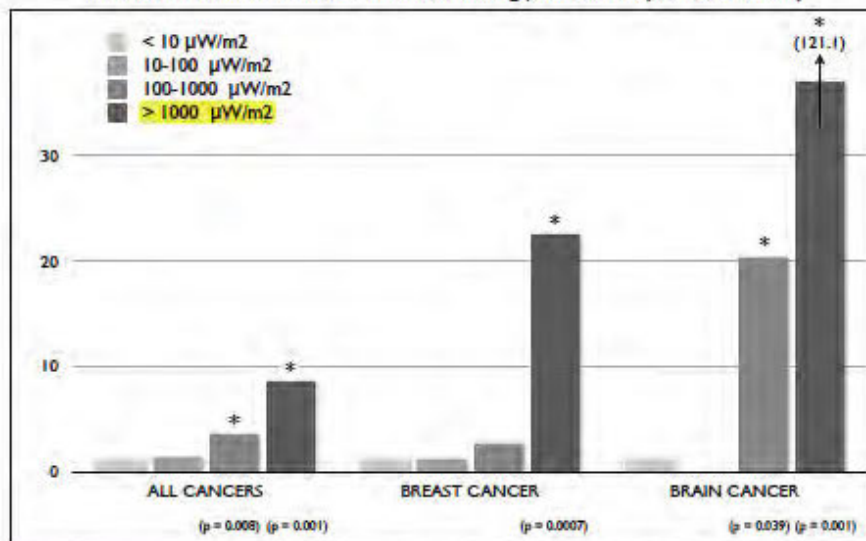


NMT 450 cell tower, operational from 1984-1997.

Case/control study of cancer patients living within 1200 meter radius of the tower.

Oberfeld G. Environmental Epidemiological Study of Cancer Incidence in the Municipalities of Hausmannstätten & Vasoldsberg (Austria). Provincial Government of Styria, Department 88, Provincial Public Health Office, Graz, Austria (2008):1-10. <http://www.emf-portal.org/EFEmportal/Austriacasestudy.pdf>

Hausmannstätten & Vasoldsberg, Austria (1984-1997)



Odds ratio of cancer incidence — stratified by exposure levels (exterior to dwelling) in $\mu\text{W}/\text{m}^2$.

Note: FCC thermal safety guidelines — $6,000,000 \mu\text{W}/\text{m}^2$

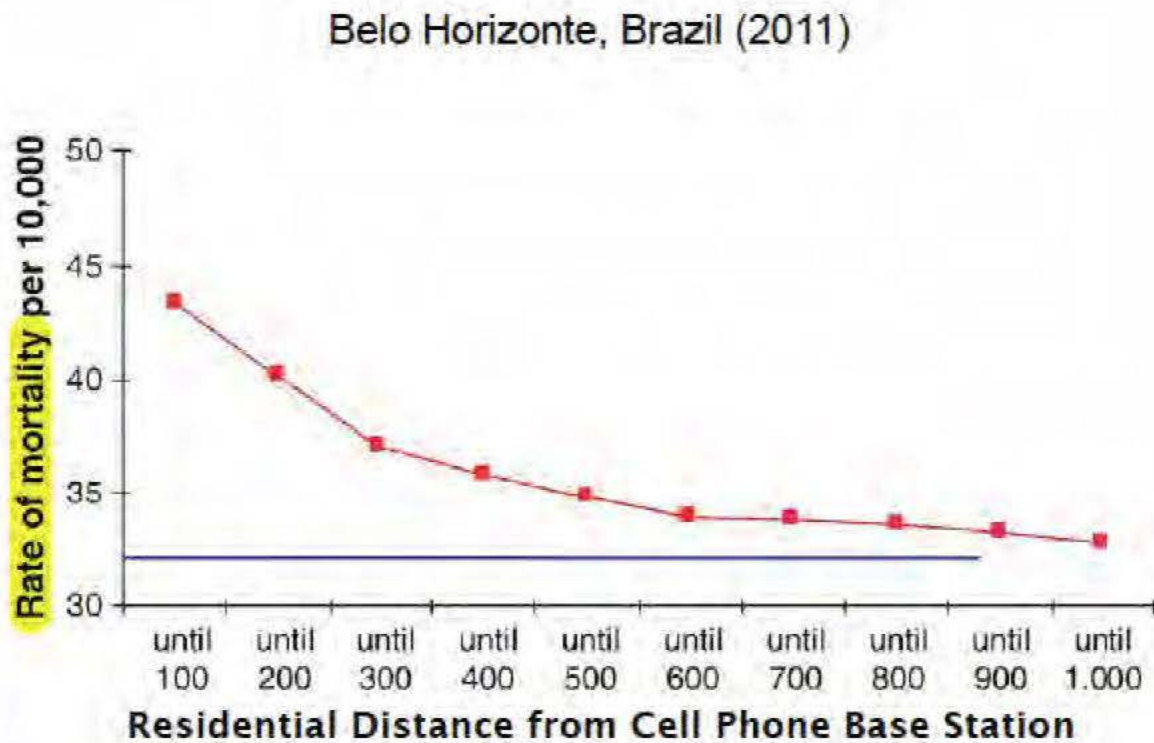
In the highest exposure category:

Breast cancer risk was 23 times higher,

Brain cancer risk was 121 times higher.

Oberfeld G. Environmental Epidemiological Study of Cancer Incidence in the Municipalities of Hausmannstätten & Vasoldsberg (Austria). Provincial Government of Styria, Department 88, Provincial Public Health Office, Graz, Austria (2008):1-10. <http://www.emf-portal.org/EFEmportal/Austriacasestudy.pdf>

Exhibit 11: Analysis of this data showed that the cancer death rate was significantly elevated at proximities closer than 500 meters to the cell phone towers. See citation on image below.



Analysis of this data showed that the cancer death rate was significantly elevated at proximities closer than 500 meters to cell phone towers.

Fig. 15. Rate of mortality by neoplasia, according to the distance from the BS in Belo Horizonte municipality, from 1996 to 2006, and the null hypothesis (blue line).

Dode AC, Leao MM, Tejo Fde A et al. Mortality by neoplasia and cellular telephone base stations in the Belo Horizonte municipality, Minas Gerais state, Brazil. *Sci Total Environ* (2011); 409(19):3649-3665.

I. Sacramento City Codes related to disruption of sleep, peace and tranquility.

Title 8 HEALTH AND SAFETY

Chapter 8.68 NOISE CONTROL http://www.qcode.us/codes/sacramento/view.php?topic=8-8_68&frames=on

Article I. General Provisions

Article II. Noise Standards

Article III. General Noise Regulations

Article IV. Administrative Procedures

Chapter 8.72 SEARCHLIGHTS http://www.qcode.us/codes/sacramento/view.php?topic=8-8_72&frames=on

8.72.010 Operating regulations.

8.72.020 Permit—Required.

8.72.030 Application.

8.72.040 Permit—Fees.

8.72.050 Permit—Revocation.

8.72.060 Insurance requirements.

II. California Child Endangerment Law California Penal Code 273a PC

<https://www.shouselaw.com/domestic-violence273a.html>

1. **Penal Code 273a** is California's criminal "**child endangerment**" law. It punishes someone who willfully exposes a child to pain, suffering, or danger. Confusingly, "child endangerment" is sometimes referred to as "child abuse." But it should not be confused with [Penal Code 273d, California's "child abuse" law](#).¹

That law punishes someone who actually physically harms or abuses a child. But under Penal Code 273a, it is the *possibility* of serious danger that is being punished.

So, someone can be charged under PC273a even if the child does not actually suffer an injury. This is what distinguishes Penal Code 273a child endangerment from Penal Code 273d child abuse.

And because no actual injury is required under Penal Code 273a, it is all too frequently charged against innocent people.

What constitutes "child endangerment" in California?

Penal Code 273a can be charged against anyone (not just parents). Usually, the adult is someone who has a minor (a child under 18) in his or her care.

Specifically, child endangerment can be charged when an adult:

- Causes or permits a minor to suffer unjustifiable physical pain or mental suffering,
- Willfully causes or permits a minor to be injured, or
- Willfully causes or permits a minor to be placed in a dangerous situation.²

Exhibit 13: Measurement methodology, meters and meter settings

I deployed an HF-59B meter built by Gigahertz Solutions and in the factory calibration period. The meter was equipped with a Gigahertz Solutions UBB27 Omni-directional antenna and DG20_G10 attenuator that is able to capture a three-dimensional quantification of the levels of radiation between 27 Megahertz (MHz) and 3,300 MHz (3.3 GHz). This meter measures the most common wireless frequencies such as radio and television stations and cell tower frequencies. The HF-59B meter is commonly used to obtain accurate, cumulative, RFR readings and is specially designed for Building Biologists and other EMF professionals.

Peak, full signal and VBW standard meter settings were used for the data log in Exhibit 3.

Peak Hold, full signal and VBW standard meter settings were used to take spot readings at locations in Exhibit 4. Spot readings were 1-3 minutes in length.

My Gigahertz Solutions NFA1000 meter using NFASOFT software, which is also in the factory calibration period, recorded the data log (Exhibit 3).

Exhibit 14: Sworn declarations of symptoms, pain and suffering from residents and guests.

Declaration of Aaron McMahon

I, Aaron McMahon, Father and legal guardian of Abigail and Hope McMahon, have personal knowledge of all facts set forth in this declaration and am competent to testify thereto if called upon to testify in a court of law. I hereby declare:

1. My name is Aaron McMahon, and I reside at 7597 Pocket Road, Sacramento, California 95831 with my wife and two daughters.
2. In late December Verizon installed a cell antenna on top of a light pole, just 45 feet from our home.
3. About a month after the antenna was installed, both of my daughters developed cold/flu like symptoms with persistent cough. These problems persisted from late January until early April, roughly one week after installing shielding in the home and moving them into a back room away from the antenna, at which point their symptoms went away and have not returned.
4. In that time the children also experienced headaches and restless sleep, symptoms that they had NEVER experienced before the antenna was installed.
5. I have also experienced severe anxiety and sleep disturbances since the antenna was installed.

I declare under penalty of perjury under the laws of the State of California that the facts set forth above are true and correct to the best of my knowledge. This declaration was executed this 13th day of April, 2019 at Sacramento, California.

/s/ 

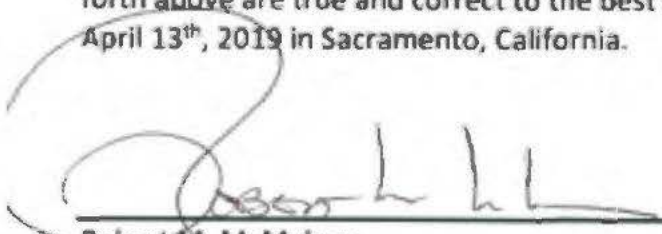
Aaron McMahon

Declaration of Robert M. McMahon

I, Robert M. McMahon, Grandfather of Abigail and Hope McMahon, have personal knowledge of all facts set forth in this declaration and am competent to testify thereto if called upon to testify in a court of law. I hereby declare:

- My name is Robert M. McMahon, I am 69 ½ years of age, and I reside at 9260 Sassafras Trail, Reno, Nevada 89523.
- I believe the symptoms below are related to a Verizon antenna installed on a light pole directly in front of our son's house at 7597 Pocket Road, Sacramento, CA 95831, where we stay when visiting overnight with our son and his family.
- Ever since Verizon installed the antenna, I have experienced severe headaches whenever I go to visit our son and family at their home. The headache typically begins 45 minutes after we arrive and does not go away until we leave for our home in Reno. The headaches are most persistent when we sleep in our granddaughter's room overnight, which is directly in line with the Verizon antenna outside their home. The headaches increase in intensity whenever we are outside or open the bedroom window.
- I have suffered from anxiety, clinical depression, and panic attacks that I believe to be a result of worrying about my family being harmed by the Verizon antenna outside their home. I have experienced anxiety/depression in the past, but it has recently gotten more frequent and more severe since the antenna was installed.
- Ever since the antenna was installed, while staying overnight, I have experienced my sleep patterns being drastically affected. I am unable to sleep through the night, experience physical and mental discomfort, and have nightmares and night sweats that I do not have while sleeping at our home in Reno.

I declare under penalty of perjury under the laws of the State of California that the facts set forth above are true and correct to the best of my knowledge. This declaration was executed on April 13th, 2019 in Sacramento, California.



Robert M. McMahon
9260 Sassafras Trail
Reno, Nevada 89523

Tele: (775) 870-9527

Declaration of Noah Davidson

I, Noah Davidson, have personal knowledge of all facts set forth in this declaration and am competent to testify thereto if called upon to testify in a court of law. I hereby declare:

1. My name is Noah Davidson, and I reside at 942 Trestle Glen Way, Sacramento CA 95831.

2. I attribute the symptoms listed below to be a result of the Verizon antenna installed on a light pole directly in front of my Sister, Hannah McMahon's home at 7597 Pocket Road, Sacramento, CA 95831.

3. Ever since Verizon installed the antenna, I experience intense headaches whenever I go to visit my Sister's home. The headache typically begins 30 minutes after I arrive and does not go away until I go to sleep for the night. The longer I stay, the more painful the headache. If we are outside or have the windows open the headache is more painful.

4. I have been experiencing anxiety, including panic attacks, that are a direct result of my family being harmed by the Verizon antenna outside their home. I have experienced anxiety in the past but it has definitely gotten more frequent and more severe since the antenna was installed.

I declare under penalty of perjury under the laws of the State of California that the facts set forth above are true and correct to the best of my knowledge. This declaration was executed this 11th day of April, 2019 at Sacramento, California.

/s/ 

Declaration of Pamela Márquez

I, Pamela A Márquez, have personal knowledge of all facts set forth in this declaration and am competent to testify thereto if called upon to testify in a court of law. I hereby declare:

1. My name is Pamela A Márquez and I reside at 6340 34th Avenue, Sacramento, California 95824.
2. On December 31, 2018 I stopped at the home of my niece Hannah McMahon on Pocket Road. I was there to leave her birthday gift off on the porch because her daughters were napping. When I returned to my car I looked up and noticed a cell antenna attached to the utility pole. I recognized the antenna because of the controversy surrounding the towers in Monterey and the newspaper coverage. I texted my niece while still parked in front of her home. She said that she had not noticed the antenna, but that it must have been installed recently. She said she was never warned about an antenna but was informed that Verizon would be working in the area.
3. On Friday, February 15, 2019, I visited Hannah and her two young daughters, Abby who is five and Hope who is three. I arrived at approximately 2:30pm. We did the usual auntie/niece stuff; played board games, read stories and ate the chocolate I brought to snack on. I noticed that both of the girls had what seemed to be a cold or flu, and were much lower energy than usual. Hannah told me they had been sick for a little over two weeks, which was very, very unusual for them. I returned to my home at 6:00pm. Shortly after, while reading a book, I noticed a loud ringing in my ears and began to get what turned into a throbbing headache. Both symptoms continued over the weekend and into Monday. By Monday, both symptoms had dissipated.
4. On Friday, March 15, 2019 I returned to my niece's home to visit. I arrived about 5pm. On this visit I brought Abby and Hope an ice cream maker and we made ice cream with mini Oreo cookies. While waiting for the ice cream we read and played board games. Again, I noticed both Abby and Hope still had cold/flu like symptoms and were lethargic compared to their usual selves. I returned to my home about 8:45pm. Once again, I experienced the symptoms of ringing in my ears and a headache; the symptoms were gone by Monday.
5. On Friday, March 29, 2019, I returned to my niece's home for a visit. I arrived after work at approximately 5pm. We read and played board games as usual. The girls were still ill. I returned home at approximately 9pm. Once again, I experienced the symptoms of ringing in my ears and a headache; the symptoms were gone by Monday.
6. March 29th was my last visit. After each of my visits I experienced prolonged symptoms of ear ringing and intense headache. Since my last visit I have not experienced either symptom.

I declare under penalty of perjury under the laws of the State of California that the facts set forth above are true and correct to the best of my knowledge. This declaration was executed this 9th day of April, 2019 at Sacramento, California.

/s/ Pamela A Márquez

Pamela A Márquez

BED CANOPY - Wireless Protection

When there is a need to reduce radiation in the bedroom to the lowest possible level, a bed canopy is the best approach as it creates a 'Faraday cage' around the entire sleeping area and shields up to 99.99% of radiation.

- Premium Sheer 100% natural cotton fabric
- Unmatched shielding characteristics
- OEKO-Tex Certified as a skin friendly textile and free from harmful substances
- Conductive threads are insulated so no exposed metal, no flaking and no need for grounding
- Canopy has 3 convenient overlapped openings (right, left and foot of bed) for easy entry and easy exit
- Used for shielding sleeping areas, or areas of similar size, from high frequency electromagnetic waves (microwaves)
- May relieve symptoms of electromagnetic hypersensitivity (EHS)
- Shielding Effectiveness 99.99% or 40 dB at 1000 MHz and 99% effective up to 10 GHz
- Fabric is designed and manufactured in Switzerland
- Effective shielding for cell towers, cordless phones, security systems, wireless computer gear and more
- Sheer fabric, easy to work with
- Easy care - Washable, with no loss in protection

The canopy is a long term solution as it can be taken with you if you ever relocate.



COST

Depending on the size, the canopies range in price from approx. \$1600 (twin) to \$2370 (king).

This price also includes a shielding bed-pad for beneath the bed (recommended/required for most bedrooms)

*some installation hardware required (wooden dowels, hanging hooks, etc.)

Shielding Products

Shielding Paint

- EMF shielding paint for interior application and exterior application
- Liquid water-based and low-emission (.02g/litre)
- Excellent shielding qualities for protection against RF radiation, microwave and from low-frequency Electric Fields if grounded
- Apply as a prime coat and cover with interior paint or exterior paint
- Good adhesion on many surfaces and substrates such as latex paint, construction board, cement, plaster, polystyrene, masonry surfaces and more...



COST

- 1 litre = \$83.00
- 5 litre = \$295.00
- 1 litre covers approx. 81 sq. feet



Window Film

- RF shielding performance 99.99 %
- Low reflectivity maintains the original appearance of your glass
- Not noticeable from the inside or outside
- Provides security from breaking glass
- Excellent solar heat control blocking 55 % of total solar energy
- Lowers summer time cooling expenses
- Blocks +99 % of Ultraviolet "UV" rays
- Blocks +95 % of Infrared "IR" rays



COST

- Sold per linear ft. in 4 or 5 ft widths
- Ø 5 ft increments
- 4 foot width = \$53.00 / linear foot
- 5 foot width = \$59.00 / linear foot

Aluminum Foil

Aluminum RF Shielding Foil is designed to block analogue and pulsed digital signals from exterior sources such as Microwave Transmitters, Cell Phone Towers, neighbours / neighbours Cordless Telephones, Wi-Fi signals, Smart Meters and more. The foil also offers an effective barrier against Low Frequency AC Electric Fields when grounded.

- Heavy Duty / Tear Proof
- Flexible and light weight
- Safe to handle and non-toxic



COST

- 125 foot roll (4 ft. width)
- \$168 per roll



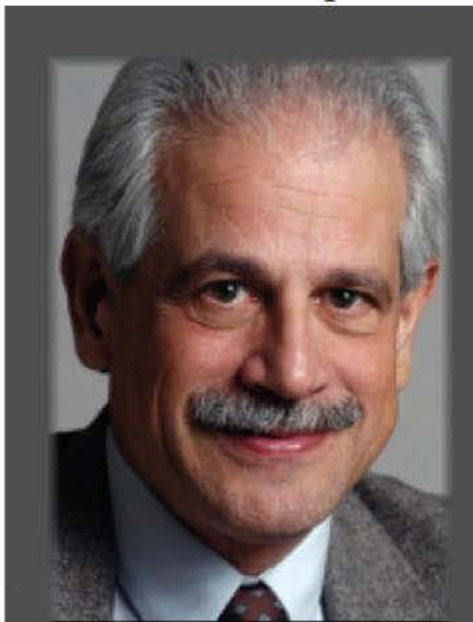
<https://www.saferemr.com/2015/04/cell-tower-health-effects.html>
<https://www.saferemr.com/2018/04/recent-research.html>

Scientific and policy developments regarding the health effects of electromagnetic radiation exposure from cell phones, cell towers, Wi-Fi, Smart Meters, and other wireless technology, courtesy of:



Joel M. Moskowitz PhD

Director and Principal Investigator, Center for Family and Community Health

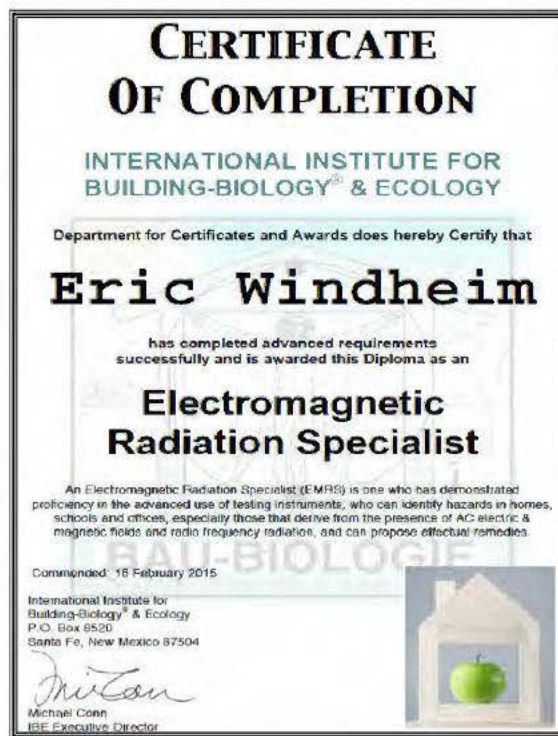
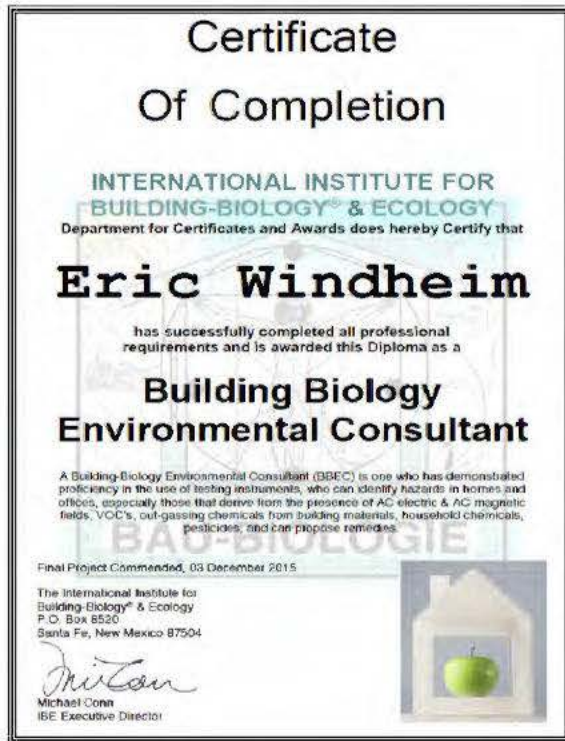


Education:

- Postdoctoral Fellow - Evaluation Research and Methodology, Northwestern University
- PhD - Social Psychology, UC Santa Barbara
- MA - Social Psychology, UC Santa Barbara
- BA - Mathematics, Rutgers University

Research Interests:

- Health promotion and disease prevention
- Tobacco control, smoking prevention and cessation
- Substance abuse prevention
- Evaluation research and behavioral surveillance methods
- Health effects of mobile phone use





Eric Windheim is the owner of Windheim Environmental Solutions, a California high technology and environmental health and wellness company that he founded in 1991. The company is located in the Sacramento area with clients worldwide. Windheim EMF Solutions specializes in electromagnetic radiation and provides inspection, assessment, measurement, risk assessment, abatement, and reduction of hazardous magnetic fields, electric fields, RFR wireless radiation, and “dirty electricity.” Clients can feel better instantly when effective EMF solutions are enacted.

Eric is a Certified Electromagnetic Radiation Specialist (EMRS) and an expert in EMF inspection, detection, measurement, risk assessment, EMF exposure reduction. He is certified to advise homeowners, homebuyers, architects, builders, inspectors, and engineers in the methods and practices that create and maintain a minimized presence of electromagnetic fields in homes and low-rise commercial buildings.

Eric is also a Certified Building Biology Environmental Consultant (BBEC), and has demonstrated proficiency in the use of testing instruments, and can identify hazards in homes and offices, especially those that derive from the presence of AC electric and AC magnetic fields, VOCs, out-gassing chemicals from building materials, household chemicals, and pesticides. He can propose solutions that provide a healthier indoor living environment that uses nature as its model.

Eric was trained and certified as an EMRS and BBEC by the International Institute for Building Biology and Ecology. The Institutes’ mission, now in its 31st year, is to help create healthy homes, schools, and workplaces, free of toxins in the indoor air and tap water, and electromagnetic pollutants.

Notable Accomplishments

- Founded & directed Sacramento Smart Meter Awareness action group which lead Sacramento Municipal Utility District, (SMUD) to allow removal of RFR transmitting Smart Meters and the retention or return of safer Analog electric meters that do not transmit RFR, 2013.
- Certified Building Biology Environmental Consultant (BBEC) 2015.
- Certified Electromagnetic Radiation Specialist (EMRS) 2015.
- Radio Frequency Safety Officer Course” (RFSO) accredited by the Institute of Electrical and Electronics Engineers, Inc. (IEEE) 2018.

Education

Eric graduated from the University of California at Santa Barbara with a BA in Geography and has studied Environmental Science, Earth Science, Geography, Geology, Hydrology, Remote Satellite Photo Interpretation, and Advanced Solar Engineering.

Professional Background

Eric specializes in EMF Assessment and exposure reduction, providing inspection, testing and remediation of microwave radiation, dirty electricity, and electric and magnetic fields. Prior to this he was the Director of Technical Services for the Sheet Metal and Air Conditioning Contractors National Association (SMACNA), Redwood Empire Chapter, providing education to HVAC contractors for California Title 24 Energy Regulation compliance. He worked for more than fourteen years in industrial machinery sales, residential and commercial solar energy system design, and sales with FAFCO Inc.

Learn More

For more information about Windheim EMF Solutions please contact us.

Phone: (916) 395-7336

Email: eric@windheimemfsolutions.com

Web: WindheimEMFSolutions.com

**EXHIBIT 7 TO AFFIDAVIT OF HANNAH MCMAHON IN SUPPORT OF
STANDING**

Declaration of Noah Davidson

I, Noah Davidson, have personal knowledge of all facts set forth in this declaration and am competent to testify thereto if called upon to testify in a court of law. I hereby declare:


1. My name is Noah Davidson, and I reside at 942 Trestle Glen Way, Sacramento CA 95831.

2. I attribute the symptoms listed below to be a result of the Verizon antenna installed on a light pole directly in front of my Sister, Hannah McMahon's home at 7597 Pocket Road, Sacramento, CA 95831.

3. Ever since Verizon installed the antenna, I experience intense headaches whenever I go to visit my Sister's home. The headache typically begins 30 minutes after I arrive and does not go away until I go to sleep for the night. The longer I stay, the more painful the headache. If we are outside or have the windows open the headache is more painful.

4. I have been experiencing anxiety, including panic attacks, that are a direct result of my family being harmed by the Verizon antenna outside their home. I have experienced anxiety in the past but it has definitely gotten more frequent and more severe since the antenna was installed.

I declare under penalty of perjury under the laws of the State of California that the facts set forth above are true and correct to the best of my knowledge. This declaration was executed this 11th day of April, 2019 at Sacramento, California.

/s/  _____

Noah Davidson

**EXHIBIT 8 TO AFFIDAVIT OF HANNAH MCMAHON IN SUPPORT OF
STANDING**

Declaration of Pamela Márquez

I, Pamela A Márquez, have personal knowledge of all facts set forth in this declaration and am competent to testify thereto if called upon to testify in a court of law. I hereby declare:

1. My name is Pamela A Márquez and I reside at 6340 34th Avenue, Sacramento, California 95824.
2. On December 31, 2018 I stopped at the home of my niece Hannah McMahon on Pocket Road. I was there to leave her birthday gift off on the porch because her daughters were napping. When I returned to my car I looked up and noticed a cell antenna attached to the utility pole. I recognized the antenna because of the controversy surrounding the towers in Monterey and the newspaper coverage. I texted my niece while still parked in front of her home. She said that she had not noticed the antenna, but that it must have been installed recently. She said she was never warned about an antenna but was informed that Verizon would be working in the area.
3. On Friday, February 15, 2019, I visited Hannah and her two young daughters, Abby who is five and Hope who is three. I arrived at approximately 2:30pm. We did the usual auntie/niece stuff; played board games, read stories and ate the chocolate I brought to snack on. I noticed that both of the girls had what seemed to be a cold or flu, and were much lower energy than usual. Hannah told me they had been sick for a little over two weeks, which was very, very unusual for them. I returned to my home at 6:00pm. Shortly after, while reading a book, I noticed a loud ringing in my ears and began to get what turned into a throbbing headache. Both symptoms continued over the weekend and into Monday. By Monday, both symptoms had dissipated.
4. On Friday, March 15, 2019 I returned to my niece's home to visit. I arrived about 5pm. On this visit I brought Abby and Hope an ice cream maker and we made ice cream with mini Oreo cookies. While waiting for the ice cream we read and played board games. Again, I noticed both Abby and Hope still had cold/flu like symptoms and were lethargic compared to their usual selves. I returned to my home about 8:45pm. Once again, I experienced the symptoms of ringing in my ears and a headache; the symptoms were gone by Monday.
5. On Friday, March 29, 2019, I returned to my niece's home for a visit. I arrived after work at approximately 5pm. We read and played board games as usual. The girls were still ill. I returned home at approximately 9pm. Once again, I experienced the symptoms of ringing in my ears and a headache; the symptoms were gone by Monday.
6. March 29th was my last visit. After each of my visits I experienced prolonged symptoms of ear ringing and intense headache. Since my last visit I have not experienced either symptom.

I declare under penalty of perjury under the laws of the State of California that the facts set forth above are true and correct to the best of my knowledge. This declaration was executed this 9th day of April, 2019 at Sacramento, California.

/s/ Pamela A Márquez

Pamela A Márquez

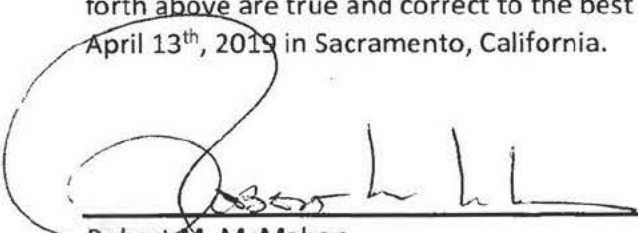
**EXHIBIT 9 TO AFFIDAVIT OF HANNAH MCMAHON IN SUPPORT OF
STANDING**

Declaration of Robert M. McMahon

I, Robert M. McMahon, Grandfather of Abigail and Hope McMahon, have personal knowledge of all facts set forth in this declaration and am competent to testify thereto if called upon to testify in a court of law. I hereby declare:

- My name is Robert M. McMahon, I am 69 ½ years of age, and I reside at 9260 Sassafras Trail, Reno, Nevada 89523.
- I believe the symptoms below are related to a Verizon antenna installed on a light pole directly in front of our son's house at 7597 Pocket Road, Sacramento, CA 95831, where we stay when visiting overnight with our son and his family.
- Ever since Verizon installed the antenna, I have experienced severe headaches whenever I go to visit our son and family at their home. The headache typically begins 45 minutes after we arrive and does not go away until we leave for our home in Reno. The headaches are most persistent when we sleep in our granddaughter's room overnight, which is directly in line with the Verizon antenna outside their home. The headaches increase in intensity whenever we are outside or open the bedroom window.
- I have suffered from anxiety, clinical depression, and panic attacks that I believe to be a result of worrying about my family being harmed by the Verizon antenna outside their home. I have experienced anxiety/depression in the past, but it has recently gotten more frequent and more severe since the antenna was installed.
- Ever since the antenna was installed, while staying overnight, I have experienced my sleep patterns being drastically affected. I am unable to sleep through the night, experience physical and mental discomfort, and have nightmares and night sweats that I do not have while sleeping at our home in Reno.

I declare under penalty of perjury under the laws of the State of California that the facts set forth above are true and correct to the best of my knowledge. This declaration was executed on April 13th, 2019 in Sacramento, California.



Robert M. McMahon
9260 Sassafras Trail
Reno, Nevada 89523

Tele: (775) 870-9527

**EXHIBIT 10 TO AFFIDAVIT OF HANNAH MCMAHON IN SUPPORT
OF STANDING**

4/10/19

Dear Representative Matsui,

In late December Verizon installed an antenna (POLE# 07551) in front of my Sister's home at 7597 Pocket Road, Sacramento California 95831. We (myself and my family) did not think much of it at first. We had heard of some negative health effects related to living near an antenna but assumed Verizon wouldn't install something that was harmful right next to someone's home. We did some cursory research on the topic, including visiting the City of Sacramento's website regarding 5G safety. "Radio frequency emissions from antennas used for cellular and PCS transmissions result in exposure levels on the ground that are typically thousands of times below safety limits." This quote was rather comforting and we moved past the issue.

In early February, my two nieces came down with what seemed like the flu. In early march my nieces were still sick and our family became concerned that the recently installed antenna could be affecting their health. Health and fitness is a big part our family's lives and we rarely ever get sick. I personally started doing a lot more research on the topic and my findings have been terrifying.

There are hundreds of scientific, peer-reviewed studies showing negative health effects associated with exposure to radio frequency (RF) radiation. Many of those studies demonstrate negative health effects far below the FCC's guidelines for safe exposure. Additionally there are a number of studies demonstrating negative health effects associated with living near a cellular or radio antenna. I have referenced a number of examples. (1, 2, 3, 4, 5, 6, 7, 8, 9, 10)

In 2011 the International Agency for Research on Cancer (IARC, part of the World Health Organization) classified RF radiation as (2b), possibly carcinogenic to humans. ⁽¹¹⁾ In light of research conducted since 2011, some experts have urged changing the classification to (Group 1) established carcinogenic to humans. ⁽¹²⁾ Two fairly recent, landmark studies both reported a statistically significant increase in incidence of cancer in rats exposed to RF radiation. ^(13, 14) We feel these studies are particularly relevant to our circumstances because both of these studies looked at prolonged exposure to RF radiation similar to what we might experience living near an antenna. In fact, individuals living near these antennas could be exposed for durations longer and more continuous than were used in either of these studies. **We do not want to live near something that could potentially give us cancer.**

Although there is no scientific consensus on the health effects of RF radiation, there is a growing movement of doctors, scientists, and other institutions warning against the potential negative health effects of RF radiation, specifically the implementation of 5G and small cell antennas near people's homes and workplace. In 2017 a group of 240 scientists from 40 countries compiled the *5G Appeal* calling for the EU to halt the roll out of 5G due to serious potential health effects from this new

technology.⁽¹⁵⁾ In 2013 the American Academy of Pediatrics, an organization of 60,000 primary care pediatricians, pediatric medical subspecialists, and pediatric surgical specialists urged the FCC to reevaluate their guidelines and adopt more protective guidelines regarding RF radiation exposure.⁽¹⁶⁾

In 2004 the International Association of Fire Fighters created the *Position on the Health Effects from Radio Frequency/Microwave (RF/MW) Radiation in Fire Department Facilities from Base Stations for Antennas and Towers for the Conduction of Cell Phone Transmissions* to oppose the use of fire stations as base stations for cellular antennas.⁽¹⁷⁾ This document cites a number of studies showing the potential negative health effects associated with exposure to RF radiation. This document came about as a result of a number of fire fighters with cellular antennas in immediate proximity to their stations, reporting neurological symptoms including headaches, extreme fatigue, sleep disruption, anesthesia-like sleep where the men woke up for 911 calls “as if they were drugged,” inability to sleep, depression, anxiety, unexplained anger, getting lost on 911 calls in the town they grew up in, a twenty year medic forgetting basic CPR in the midst of resuscitating a coronary victim, as well as immune-suppression manifest in frequent colds and flulike symptoms. A study conducted by Dr. Gunnar Hussar examined six fire fighters reporting these symptoms. Brain scans revealed abnormalities in all six fire fighters. Cognitive function, reaction time, and impulse control were measured objectively using T.O.V.A. testing (Test of Variables of Attention). Impairment was found with cognitive function, reaction time and impulse control in all six firefighters.⁽¹⁸⁾ The experiences of these fire fighters are of particular concern to us because they closely resemble the proximity and duration of exposure to cell antennas that we are facing living near this antenna. Additionally, this would seem to create a precedent for individuals to opt out of having antennas near their home or workplace due to health concerns. By allowing Verizon to keep operating their antenna outside of our homes, against our will, we are being told our health, our safety, our lives are worth less than fire fighters’. Surely this is not in line with American values.

In addition to the scientific data suggesting negative health effects related to exposure to RF radiation, it is impossible to ignore the news stories currently making headlines about RF radiation. Not too far from us, in the city of Ripon California, Sprint recently turned off their antenna at Weston Elementary school after ten cancer cases were reported among students, faculty, and children living in the area.⁽¹⁹⁾ Just last week Brussels halted their 5G rollout due to health concerns related to RF radiation exposure. Environment minister Céline Fremault said "The people of Brussels are not guinea pigs whose health I can sell at a profit. We cannot leave anything to doubt."⁽²⁰⁾ Obviously these stories do not prove exposure to RF radiation is dangerous, but they do prove that other people are aware of the potential dangers associated with RF radiation exposure.

When evaluating the potential health effects of RF radiation, it is impossible to ignore the large amount of scientific evidence suggesting that exposure to RF radiation is not dangerous. However, the bulk of this research is aimed at evaluating the risk associated with cell phone use, not living in the immediate vicinity of an antenna. Furthermore, the bulk of these studies examine exposure durations far, far shorter than we would experience living in the immediate vicinity of an antenna.

The studies that do examine the health effects associated with living near an antenna generally look at large groups of people living at various distances from the antenna. The vast majority of this data simply does not pertain to living in the immediate vicinity of an antenna.

Another area of concern and uncertainty has to deal with the height at which this antenna was installed. According to the FCC, cellular antennas are typically installed 50-200 feet above ground level. ⁽²¹⁾ The antenna near our homes is at roughly the same height as the second story of our homes, meaning we do not have that 50-200 foot vertical distance barrier, and this antenna will be transmitting directly into our homes. The quote I referenced earlier from the City of Sacramento's website: "radio frequency emissions from antennas used for cellular and PCS transmissions result in exposure levels on the ground that are typically thousands of times below safety limits" is from this same FCC document and it is clearly referencing antennas that are 50-200 feet above ground level. We feel it is incredibly misleading for our city to reference data that does not pertain to the situation its citizens are actually facing having these antennas right outside our homes, at the same level as our second stories. To us it appears our city is purposely lying in order to quell people's fears about having these antennas right outside their windows. This misleading information deceived our family and lost us precious time in taking action to have the antenna removed.

Considering all these factors, we feel there is insufficient evidence suggesting that we will not be harmed by the antenna installed by Verizon. In fact, we have not found a single study demonstrating no negative health effects associated with living in the immediate vicinity of a cellular antenna. If you examine the history of known dangerous substances such as cigarettes, asbestos, and DDT, you see a period of time where these substances were widely used and the negative health effects associated with these substances were unknown. It took a lot of time and a lot of research to establish that these substances were in fact harmful to humans. By installing an antenna near our homes, without knowing for certain that the antenna is safe, Verizon is setting us to be a tragedy of the unknown health effects of RF radiation and they are doing so *against our will*. **This is completely unacceptable to us.** Even if RF radiation turns out to be safe, we are currently living with the mental anguish of not knowing if we are being harmed, of not knowing if our children are safe in their own homes. It is a horrible way to live and it is a direct result of Verizon's antenna. We did not ask for this antenna. We were not forewarned about this antenna. We did not consent to having this antenna near our homes. We want it turned off and removed immediately.

The second reason for requesting the antenna be removed has to deal with property values. There are a number of articles from the realtor industry documenting a reduction in property value for homes near a cell antenna. ^(22, 23) There are also a number of popular wellness websites warning against the potential negative health effects associated with living near a cellular antenna. ^(24, 25) This information could potentially influence people's buying decisions. As more antennas go up around people's homes, it should be expected that awareness and concern about RF radiation will increase. For example, none of us had looked into this topic much until the antenna was on our doorstep. It should also be expected that a growing number of people will not want to live in close proximity to a cellular antenna. This will limit the number of buyers willing to buy our homes.

To be clear, we are not asking to halt the 5G project in the Sacramento area. We understand that many members of our city are welcoming of this new technology and the possibilities 5G brings. We are simply asking for the antenna near our home to be turned off immediately and then removed. Additionally we do not want any antennas installed near our home in the future. We understand this may cause some difficulty in building the infrastructure required for the 5G network to function optimally, but we feel our safety and peace of mind supersede the need to build any antennas near our homes.

Over the past few days I have shared my findings with the neighbors near my Sister's home and every single person I talked to feels the same way I do. Most of them had no idea they were living near an antenna. They had either not noticed the device or had not known what it was. Once I told them they were outraged. We are all outraged that Verizon would endanger our health and our property, without any warning, without our permission; and that our government would authorize them to do so, also without warning or consent. ***It is absolutely unconscionable.*** We recently submitted a letter to Verizon, signed by most of the neighbors around the antenna, requesting that they remove the antenna. We are currently awaiting their response.

As my elected representative I am calling upon you to help my family and my neighbors get this antenna turned off as soon as possible. It has been agonizing to wonder if my family is being harmed in their own homes. As I said, my nieces have been sick for over two months now. They have a doctor's appointment in two weeks to have some blood work done. It is impossible not to wonder if the antenna is contributing to their poor health. Especially when they were so healthy just before the antenna was installed. Obviously none of us want to think that, but it is impossible not to. We feel it is completely unfair to expose us to this threat and the accompanying psychological terror against our will. Our rights have been trampled on. We ask that you do all you can to get this antenna turned off and away from our home. My family and I thank you for taking the time to deal with this matter.

Respectfully,

Noah Davidson
[REDACTED]
[REDACTED]

References

- (1) L.G. Salford *et al.* Nerve cell damage in mammalian brain after exposure to microwaves from GSM mobile phones. *Environmental Health Perspectives*. 2003 Jun;111(7):881-3; discussion A408.
- (2) Kaiser Permanente. *Study: Evidence of risks linked to magnetic field exposure*. 2017 Dec. <https://about.kaiserpermanente.org/our-story/health-research/news/new-kaiser-permanente-study-provides-evidence-of-health-risks-li>
- (3) I. Yakymenko *et al.* Oxidative mechanisms of biological activity of low-intensity radiofrequency radiation. *Electromagnetic Biology and Medicine*. 2016;35(2):186-202.
- (4) E.E. Fesenko *et al.* Microwaves and cellular immunity. Effect of whole body microwave irradiation on tumor necrosis factor production in mouse cells. *Bioelectrochemistry and Bioenergetics*. 1999 Oct;49(1):29-35.
- (5) A.I. Yurekli *et al.* GSM base station electromagnetic radiation and oxidative stress in rats. *Electromagnetic Biology and Medicine*. 2006;25(3):177-88.
- (6) G. Abdel-Rassoul *et al.* Neurobehavioral effects among inhabitants around mobile phone base stations. *Neurotoxicology*. 2007 Mar;28(2):434-40.
- (7) B. Hocking *et al.* Cancer incidence and mortality and proximity to TV towers. *The Medical Journal of Australia*. 1996 Dec 2-16;165(11-12):601-5.
- (8) P. Michelozzi *et al.* Adult and Childhood Leukemia near a High-Power Radio Station in Rome, Italy. *American Journal of Epidemiology*. 2002 June. Volume 155, Issue 12, Pages 1096–1103.
- (9) R. Wolf, D Wolf. Increased Incidence of Cancer Near a Cellphone Transmitter Station. *International Journal of Cancer Prevention*. 2004 Apr. Volume 1, Number 2.
- (10) B. Levitt, H. Lai. Biological effects from exposure to electromagnetic radiation emitted by cell tower base stations and other antenna arrays. *Environmental Reviews*, 2010, 18(NA): 369-395.
- (11) International Agency for Research on Cancer. *IARC Classifies Radiofrequency Electromagnetic Fields As Possibly Carcinogenic To Humans*. Lyon, France, May 31, 2011.
- (12) A. Miller *et al.* Cancer epidemiology update, following the 2011 IARC evaluation of radiofrequency electromagnetic fields. *Environmental Research*. 2018 Nov. Volume 167, Pages 673-683.

(13) L. Falcioni *et al.* Report of final results regarding brain and heart tumors in Sprague-Dawley rats exposed from prenatal life until natural death to mobile phone radiofrequency field representative of a 1.8 GHz GSM base station environmental emission. *Environmental Research*. 2018 Aug. Volume 165, Pages 496-503.

(14) M.E. Wyde *et al.* Toxicology and Carcinogenesis Studies in B6C3F1/N Mice Exposed to Whole-Body Radio Frequency Radiation at a Frequency (1,900MHz) and Modulations (GSM and CDMA) Used By Cell Phones. National Toxicology Program. 2018 Nov.

(15) R. Nyberg *et al.* *The 5G Appeal*. 2017 Sep. <http://www.5gappeal.eu/>

(16) American Academy of Pediatrics. Letter to the FCC. 2013 Aug.
<https://ecfsapi.fcc.gov/file/7520941318.pdf>

(17) International Association of Fire Fighters, Division of Occupational Health, Safety, and Medicine. *Position on the Health Effects from Radio Frequency/Microwave (RF/MW) Radiation in Fire Department Facilities from Base Stations for Antennas and Towers for the Conduction of Cell Phone Transmissions*. 2004 Aug.

(18) S. Foster. *Affidavit of Susan D. Foster, MSW*. 2013 Feb.
<https://ecfsapi.fcc.gov/file/7022117660.pdf>

(19) K. Carlson. *Turned off: Sprint shuts down cell tower at Ripon school over parents' cancer concerns*. The Modesto Bee. 2019 Mar.

(20) *Radiation concerns halt Brussels 5G development, for now*. The Brussels Times. 2019 Apr.

(21) Federal Communication Commission. *RF Safety FAQ*. Question 15. 2015 Nov.
<https://www.fcc.gov/engineering-technology/electromagnetic-compatibility-division/radio-frequency-safety/faq/rf-safety>

(22) Burgoyne Appraisal Company. *Impact of Communication Towers and Equipment on Nearby Property Values*. 2017 Mar.

(23) National Association of Realtors. *Cell Towers, Antennas Problematic for Buyers*. 2014 July.
<https://magazine.realtor/daily-news/2014/07/25/cell-towers-antennas-problematic-for-buyers>

(24) K Wells. *Is EMF Exposure Really a Big Deal?* 2019 Jan.
<https://wellnessmama.com/129645/emf-exposure/>

(25) M.C. Oz. *Dr. Oz Explains Cell Phone Radiation*. 2015 Nov.

https://www.doctoroz.com/episode/does-your-cell-phone-case-increase-your-radiation-risk?video_id=4594171712001

**EXHIBIT 11 TO AFFIDAVIT OF HANNAH MCMAHON IN SUPPORT
OF STANDING**



Federal Communications Commission
Washington, D.C. 20554

May 2, 2019

The Honorable Doris Matsui
U.S. House of Representatives
Robert T. Matsui United States Courthouse
501 I Street, Suite 12-600
Sacramento, CA 95814

MAY 09 2019

Attention: Meaghan Stiles

Dear Congresswoman Matsui:

Thank you for your email on April 11, 2019 on behalf of your constituent, Mr. Noah Davidson, of Sacramento, California. Mr. Davidson believes his two nieces' current state of health may be related to their proximity to a wireless base station installed on a utility pole in front of his sister's residence.

The policy of the FCC with respect to environmental radiofrequency (RF) emissions has been developed to ensure that FCC-regulated transmitters do not expose the public or workers to levels of RF energy that are considered by expert organizations to be potentially harmful. Since the FCC is not a health and safety agency itself, we must defer to other organizations and agencies with respect to the biological research necessary to determine what levels are safe. In the United States, the Institute of Electrical and Electronics Engineers, Inc. (IEEE), and the National Council on Radiation Protection and Measurements (NCRP) have issued recommendations for human exposure to RF fields. Both the NCRP and IEEE guidelines were developed by scientists and engineers with extensive experience and knowledge in the area of RF biological effects and related issues. These individuals spent a considerable amount of time evaluating published scientific studies, including studies of the health status of exposed persons, relevant to establishing safe levels for human exposure to RF energy. The FCC guidelines for human exposure to RF electromagnetic fields are based on recommendations from the U.S. Environmental Protection Agency (EPA), the Food and Drug Administration (FDA) and other federal health and safety agencies. These FCC guidelines were derived from exposure limits recommended by the NCRP and the IEEE mentioned above.

For typical wireless communications base station antennas, the power levels are relatively low and the transmitting antennas are located high enough above areas accessible to the public that levels of exposure to the public are substantially below the FCC's RF exposure limits. Only the spatial region at the same height and within a distance of about 10-20 feet directly in front of each antenna has the potential to exceed the FCC RF exposure limits for the general public. Mr. Davidson's sister's residence, 7597 Pocket Road, Sacramento, California, is shown on a map to be at least as far away from these wireless base station antennas that the exposure levels in her home would be compliant with the FCC's RF exposure limits. Enclosed is an FCC information sheet for further information, entitled, "Human Exposure to Radiofrequency Fields: Guidelines for Cellular and PCS Sites."

On the subject of the potential for health effects from exposure to RF energy, we note that the World Health Organization (WHO) states on its website that "[f]rom all evidence accumulated so far, no adverse short- or long-term health effects have been shown to occur from the RF signals produced by base stations." A copy of this webpage is also enclosed. Note that

this webpage goes on to say that the public perception of a possible risk from such exposure may contribute to a feeling of uncertainty or a lack of control:

"Some people perceive risks from RF exposure as likely and even possibly severe. Several reasons for public fear include media announcements of new and unconfirmed scientific studies, leading to a feeling of uncertainty and a perception that there may be unknown or undiscovered hazards. Other factors are aesthetic concerns and a feeling of a lack of control or input to the process of determining the location of new base stations. Experience shows that education programmes as well as effective communications and involvement of the public and other stakeholders at appropriate stages of the decision process before installing RF sources can enhance public confidence and acceptability."

Mr. Davidson also mentions "two fairly recent, landmark studies" including a study published by the U.S. National Toxicology Program (NTP) as support for claims that human exposure to RF energy is carcinogenic or otherwise hazardous to our health. We note that NTP has recently released its final reports on rats and mice exposed to RF emissions like that used in 2G and 3G cell phone technologies. While the NTP continues to execute its research program in the area of RF exposure, the U.S. Food and Drug Administration (FDA) maintains that the current FCC guidelines are acceptable. The NTP reports presented findings from observations while exposing rodents over their lifetime to extremely high levels of radiofrequency energy (considerably above the current FCC limits) throughout various tissues and organs in the entire body – with inconsistent results depending on tissue type. Both agencies agree that NTP's findings should not be directly interpreted to apply to humans.

Finally about Mr. Davidson's nieces' health condition, electromagnetic hypersensitivity (EHS) is a term used to describe a variety of non-specific symptoms, such as headache, fatigue, nausea, ringing in the ears, digestive disorders, skin redness and burning sensations, which some individuals attribute to EMF exposure. At levels normally encountered in our daily lives, EMFs are unperceived by our senses. While we recognize EHS symptoms may be real, numerous scientific studies have failed to demonstrate that they are associated with EMF exposure. In studies where human subjects (including EHS sufferers) were intentionally exposed to EMFs, most individuals were unable to detect when EMFs were present and when they were not present, or they showed symptoms that did not correlate with their actual exposure condition. The causes of EHS symptoms are unclear and there are suggestions that they might arise from environmental factors unrelated to EMFs.

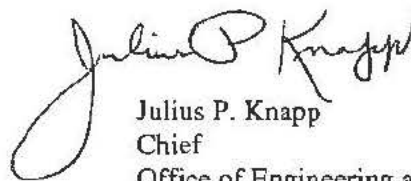
We note specifically that according to the World Health Organization (WHO) "no scientific basis currently exists for a connection between EHS and exposure to EMF." The WHO notes that EHS has no agreed-upon diagnostic criteria and there is no consensus within the scientific community that its symptoms are linked to EMF. In 2006, the proceedings of a workshop held by the WHO on EHS communicate the preference for labeling the condition idiopathic environmental intolerance (IEI) attributed to EMF, due to multiple recurrent symptoms, association with environmental factors tolerated by most people, and no explanation by any known disorder. The proceedings go on to state that "IEI should not be used as a medical diagnosis since there is presently no scientific basis to link IEI symptoms to EMF exposure."¹

¹ Hillert, L., Leitgeb, N., Meara, J., 2006 Working group report. In Hansson, Mild K., Repacholi, M., van Deventer, E., Ravazzani, P. (editors), "Electromagnetic Hypersensitivity," Proceedings: International Workshop on EMF Hypersensitivity. Prague: WHO. pp. 15–26.

We can only suggest that Mr. Davidson seek additional medical counsel to diagnose the causes of his nieces' complaints.

I hope that this information will be helpful. Please know that the FCC is continually monitoring the issue of RF exposure and related health and safety concerns, both in the general terms of the continuing propriety of its regulations, and in individual cases where substantive concerns are raised. You may find additional information on our Internet web site at <http://www.fcc.gov/oet/rfsafety>.

Sincerely,

A handwritten signature in black ink, appearing to read "Julius P. Knapp". The signature is fluid and cursive, with a large initial "J" and "K".

Julius P. Knapp
Chief
Office of Engineering and Technology

Enclosures (3)

**EXHIBIT 12 TO AFFIDAVIT OF HANNAH MCMAHON IN SUPPORT
OF STANDING**

**WATERFORD**

Radiofrequency Emissions Compliance Report

Site: Pole #SLT-7551**Project:****Utility Pole Small Cell****Address: 7597 Pocket Rd, Sacramento, CA****Report Date:****July 29, 2019**

Summary Statement

Based on information provided by the client and predictive modeling, the small cell installation at Pole #SLT-7551 near 7597 Pocket Road in Sacramento, California is compliant with Radiofrequency (RF) Radiation Exposure Limits of 47 C.F.R. §§ 1.1307(b)(3) and 1.1310. The transmit operations will not expose members of the General Public at ground level or in adjacent buildings to hazardous levels of RF energy.

Certification

I, Steven N. Baier-Anderson, am the reviewer and approver of this report and am fully aware of and familiar with the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation, specifically in accordance with FCC's OET Bulletin 65. I have reviewed this Radio Frequency Exposure Assessment report and believe it to be both true and accurate to the best of my knowledge.

Radiofrequency Hazard Assessment Framework

Service providers build new communication sites in order to address customer needs for coverage and capacity offered by wireless networks. Sites consist of radio equipment that is located at ground level or mounted near antennas and are designed to provide service to specific areas in the community. A common concern relating to the siting of antennas is the potential impact on human health.

The FCC requires licensees to ensure that new and existing wireless operations do not expose people to hazardous levels of RF electromagnetic energy. Service providers consider compliance with these rules when designing new sites or modifying existing operations that could change the RF environment. The FCC exposure rules have been codified in response to the National Environmental Policy Act of 1969 which requires government agencies to evaluate the impact of their actions on the "quality of the human environment." Documentation of adherence to these rules is typically included in the environmental compliance applications submitted to local authorities responsible for reviewing and approving new or modified telecommunications installations.

The FCC rules are based on exposure limits established by scientific and engineering organizations that review human health research in this field. At RF frequencies, the electromagnetic waves utilized by cellular sites represent non-ionizing radiation which can be absorbed by the human body. The FCC limits include a 50-fold safety factor above exposure levels where adverse thermal effects may result. By contrast, the energy

available in ionizing radiation (e.g. X-rays) is higher and has the ability to permanently damage tissue cells at the molecular level. Unlike ionizing radiation, exposure to non-ionizing radiation does not have cumulative effects and the FCC limits are based on the body's thermoregulation capabilities.

The FCC radiofrequency radiation exposure compliance requirements are set forth in 47 C.F.R. §§1.1307(b) and 1.1310. The limits are defined by maximum Specific Absorption Rate (SAR) values of the human body for two tiers of permissible exposure differentiated by the situation in which the exposure takes place and/or the status of the individuals who are subject to exposure. The first tier, General Population / Uncontrolled, exposure limits apply to those situations in which persons may not be aware of the presence of electromagnetic energy, where exposure is not employment-related, or where persons cannot exercise control over their exposure. The second tier, Occupational / Controlled, exposure limits apply to situations in which persons are exposed as a consequence of their employment, have been made fully aware of the potential for exposure, and can exercise control over their exposure. The FCC General Population limits are 5 times more restrictive than the Occupational limits. Based on these criteria, the FCC limits for the General Population are associated with continuous exposure conditions and exposure levels below these limits are not hazardous.

Table 1: FCC Limits

Frequency (MHz)	Limits for General Population/ Uncontrolled Exposure		Limits for Occupational/ Controlled Exposure	
	Power Density (mW/cm ²)	Averaging Time (minutes)	Power Density (mW/cm ²)	Averaging Time (minutes)
30-300	0.2	30	1	6
300-1500	f/1500	30	f/300	6
1500-100,000	1.0	30	5.0	6

f=Frequency (MHz)

As a practical method of evaluating compliance in deployment scenarios, the FCC has set forth Maximum Permissible Exposure (MPE) limits which are derived from the whole-body SAR limits. Specified in terms of electric field strength, magnetic field strength and equivalent plane-wave power density, compliance may be evaluated through computational or measurement methods provided in the FCC Office of Engineering & Technology Bulletin 65, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields" (OET-65). Factors that determine exposure conditions include frequency, operating power, distance and directivity of the antenna. Cellular operators utilize these guidelines to design communications sites that maintain safe environmental conditions.

Compliance assessment involves consideration of the cumulative contributions of all wireless operations. The power density resulting from an RF source may be expressed as a percentage of the frequency-specific FCC limits. In scenarios involving multiple RF emitters, the percentage of the FCC limits from each source are summed to determine if 100% of the exposure limit has been exceeded at a given location. An evaluation of existing environmental conditions may be performed through predictive modeling as set forth in OET-65 or collecting broadband measurements. The impact of new or modified wireless operations must be assessed in this cumulative scenario and any area that is accessible to members of the General Population must be compliant. In situations where the predicted MPE exceeds the General Population threshold in an accessible area as a result of emissions from multiple transmitters, FCC licensees that contribute greater than 5% of the aggregate MPE share responsibility for mitigation.

At wireless sites, antennas may support transmit or receive operations. Receive antennas and other appurtenances are not sources of RF emissions. RF energy decreases significantly with distance from any antenna. The panel-type antennas typically employed at a site are highly directional by design and emissions below and behind the antenna may be 1000x less than emissions in front. The antenna directivity serves to

reduce the potential to exceed MPE limits at any location other than directly in front of the antennas. When antennas are mounted on monopole, lattice or guyed towers, this directivity and the mounting height result in RF exposure conditions at ground-level that are well below the FCC General Population limits (typically less than 2% MPE) even when multiple wireless service providers share a tower. Small cell installations may utilize omnidirectional antennas that provide coverage in all directions. However, the antenna patterns may have similar directivity to focus signals toward the horizon and away from the ground. While the vertical separation between antennas and persons at ground level is less for small cell installations involving telephone poles or street lights, the operations may employ lower operating powers due to the use of fewer frequencies.

Based on the computational guidelines set forth in FCC OET Bulletin 65, predictions of the overall Maximum Permissible Exposure possible at any location given the spatial orientation and operating parameters of multiple RF sources is possible. The power density in the Far Field of an RF source is specified by OET-65 Equation 5 as follows:

$$S = \frac{EIRP}{4\pi R^2} \text{ (mW/cm}^2\text{)} \quad \text{Equation 1}$$

where EIRP is the Effective Radiated Power relative to an isotropic antenna and R is the distance between the antenna and point of study. Additionally, consideration is given to the manufacturers' horizontal and vertical antenna patterns as well as radiation reflection. At any location, the predicted power density in the Far Field is the spatial average of points within a 0 to 6 foot vertical profile that a person would occupy. Near field power density is based on OET-65 Equation 20 stated as

$$S = \left(\frac{180}{\theta_{BW}}\right) \cdot \frac{100 \cdot P_{in}}{\pi \cdot R \cdot h} \text{ (mW/cm}^2\text{)} \quad \text{Equation 2}$$

where P_{in} is the power input to the antenna and h is the aperture length. These theoretical results represent worst-case predictions as emitters are assumed to be operating at 100% duty cycle and with no power control.

Description of Installation

Waterford Consultants, LLC has been contracted to conduct a Radiofrequency Electromagnetic Compliance assessment of a small cell installation within the City of Sacramento. This report contains information about the radio telecommunications equipment installed at this site and the surrounding environment with regard to potential hazardous RF exposure conditions. Information about the installation designs and operational parameters were obtained from City of Sacramento Department of Public Works "Revocable Permit Application And Permit Form" for Permit # REV18-0527 (Pocket Rd - 7597 - REV18-0527.pdf) provided by the client.

The small cell at Pole #SLT-7551 near 7597 Pocket Road depicted in Figure 1 is operated by Verizon Wireless. In this area, Verizon Wireless holds FCC licenses in the 700, 850, 1900 and 2100 MHz bands and provides 3G voice (CDMA) and 4G data (:LTE) services. The installation at Pole #SLT-7551 supports 4G data operations in the 1900 and 2100 MHz bands. Generally, radiowave propagation at these frequencies is more susceptible to losses from ground clutter (e.g. vegetation, buildings) than at higher frequencies. Small cell operations such as this augment disparate coverage by band as well as enhancing the data traffic capacity of the network.

The installation at Pole #SLT-7551 consists of mounting an Amphenol Model CUUT360X06F antenna and associated equipment on an existing street light pole. The antenna centerline is 31 feet above ground level (AGL). Ericsson Remote Radio Units (RRUS 32/72) utilize the antenna to support transmit and receive functions. While a single broadband signal is transmitted in each band, LTE Multiple Input-Multiple Output (MIMO) technology involves transmitting four instances of the same signal using different propagation paths in order to improve reliability and capacity of the wireless downlink. The composite power resulting from all paths must be considered in this analysis. Operating parameters are depicted in Table 2.

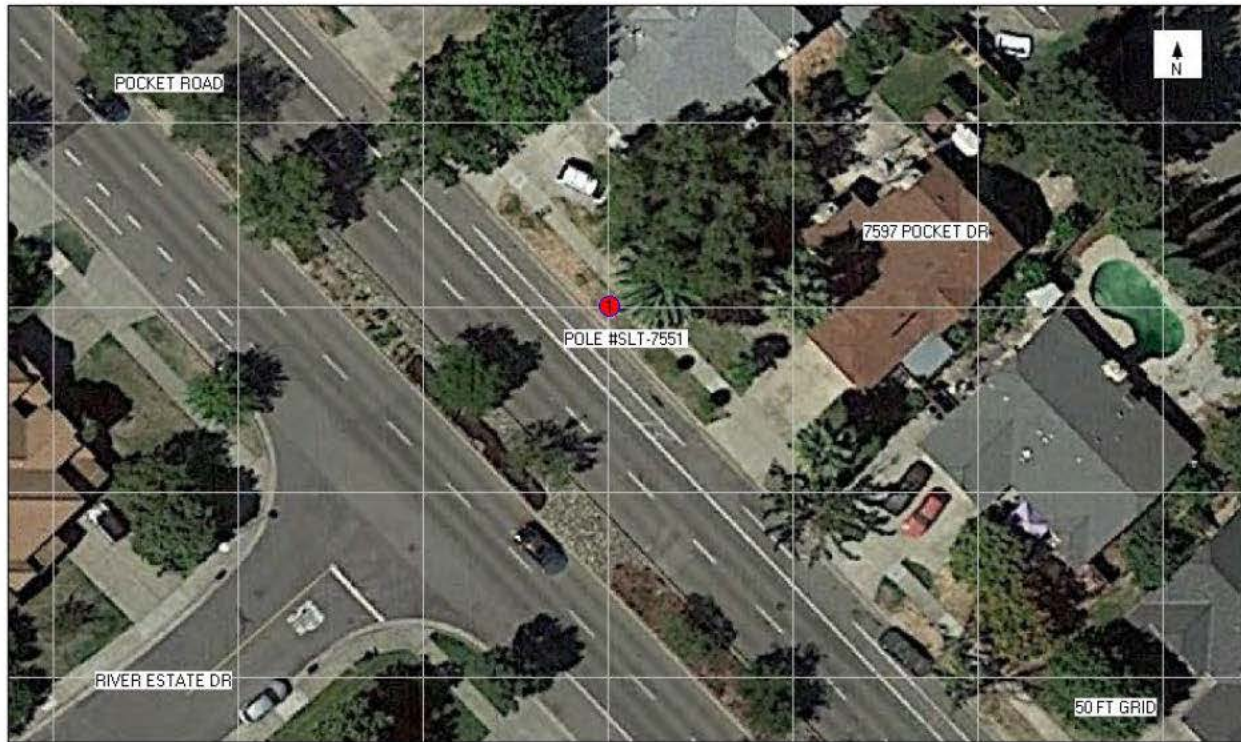


Figure 1: Pole #SLT-7551 Location

Table 2: Antenna Operating Parameters (Amphenol CUUT360X06FX4Z0)

Frequency (MHz)	Technology	Antenna Gain (dBd)	Aperture (ft)	Horizontal Beamwidth (Deg)	Transmitter Output Power per Path (W)	Paths	Feeder Loss (dB)	ERP (W)	Ceneterline AGL (ft)
1900	LTE	4.85	2	360	40	4	0	488.8	31
2100	LTE	6.15	2	360	40	4	0	659.4	31

Based on the search results of FCC databases, no other licensed fixed antennas are known to be operating within 0.5 miles of this location. Therefore, no other RF sources are considered to be significant contributors the existing RF environment and the analysis presented herein is based solely on the operations at Pole #SLT-7551.

Analysis

Using the operating parameters depicted in Table 2, power density at 6 feet above ground level representing adult head height was calculated in accordance with equation 1. These results are presented in Table 3 and Figure 2 as a function of distance from the pole and are expressed as a percentage of the FCC General Population limits. As described in OET-65, radiowave reflections from the ground may increase the power density at any given location. In this analysis, a conservative four-fold increase has been included. A maximum ground level MPE of 1.8305% of the FCC General Population limit was found within 200 feet of the pole. While the FCC limits are based on whole-body exposures, these spatial peak results may be considered representative of the spatially averaged power density within the profile that a person could occupy.

Table 3: Calculated Ground Level RF Power Density as Percentage of FCC General Population Limits

Horizontal Distance From Pole (ft)	Distance from Antenna ¹ (ft)	Declination (deg)	1900 MHz Pattern dB Off Peak ² (dB)	1900 MHz ERP ⁴ (W)	2100 MHz Pattern dB Off Peak ³ (dB)	2100 MHz ERP ⁴ (W)	Composite ERP ⁴ (W)	Power Density (mW/cm ²)	FCC General Population Limit (mW/cm ²)	% of MPE	% of MPE with Reflection ⁵
0	25.0	90.0	39.6	0.1	26.6	1.1	1.1	0.0025240	1.0000	0.0252%	0.1010%
5	25.5	78.7	37.5	0.1	37.4	0.1	0.2	0.00003801	1.0000	0.0038%	0.0152%
10	26.9	68.2	27.3	0.9	47.2	0.0	0.9	0.00017816	1.0000	0.0178%	0.0713%
15	29.2	59.0	19.9	5.0	27.7	0.8	5.8	0.00096383	1.0000	0.0964%	0.3855%
20	32.0	51.3	23.4	2.2	22.5	2.7	5.0	0.00068292	1.0000	0.0683%	0.2732%
25	35.4	45.0	41.9	0.0	21.5	3.5	3.5	0.00039244	1.0000	0.0392%	0.1570%
30	39.1	39.8	24.0	1.9	63.6	0.0	1.9	0.00017927	1.0000	0.0179%	0.0717%
35	43.0	35.5	18.7	6.6	19.3	5.7	12.3	0.00093676	1.0000	0.0937%	0.3747%
40	47.2	32.0	16.9	10.0	14.6	16.9	26.9	0.00170015	1.0000	0.1700%	0.6801%
45	51.5	29.1	16.8	10.2	12.6	26.9	37.1	0.00196530	1.0000	0.1965%	0.7861%
50	55.9	26.6	19.2	5.9	12.8	25.7	31.5	0.00141732	1.0000	0.1417%	0.5669%
55	60.4	24.4	24.3	1.8	14.6	16.9	18.8	0.00072219	1.0000	0.0722%	0.2889%
60	65.0	22.6	40.6	0.0	18.9	6.3	6.3	0.00021078	1.0000	0.0211%	0.0843%
65	69.6	21.0	25.5	1.4	24.0	1.9	3.3	0.00009626	1.0000	0.0096%	0.0385%
70	74.3	19.7	16.0	12.3	25.1	1.5	13.8	0.00035058	1.0000	0.0351%	0.1402%
75	79.1	18.4	13.2	23.4	18.2	7.4	30.8	0.00069213	1.0000	0.0692%	0.2769%
80	83.8	17.4	10.9	39.7	14.2	18.6	58.3	0.00116610	1.0000	0.1166%	0.4664%
85	88.6	16.4	8.9	63.0	11.3	36.2	99.2	0.00177528	1.0000	0.1775%	0.7101%
90	93.4	15.5	7.3	91.0	9.0	61.5	152.6	0.00245621	1.0000	0.2456%	0.9825%
95	98.2	14.7	5.9	125.6	7.2	93.1	218.8	0.00318481	1.0000	0.3185%	1.2739%
100	103.1	14.0	5.9	125.6	7.2	93.1	218.8	0.00289256	1.0000	0.2893%	1.1570%
105	107.9	13.4	4.7	165.6	5.8	128.6	294.2	0.00354742	1.0000	0.3547%	1.4190%
110	112.8	12.8	3.6	213.4	4.5	173.4	386.8	0.00427007	1.0000	0.4270%	1.7080%
115	117.7	12.3	3.6	213.4	4.5	173.4	386.8	0.00392322	1.0000	0.3923%	1.5693%
120	122.6	11.8	2.7	262.5	3.5	218.3	480.8	0.00449563	1.0000	0.4496%	1.7983%
125	127.5	11.3	2.7	262.5	3.5	218.3	480.8	0.00415673	1.0000	0.4157%	1.6627%
130	132.4	10.9	2.0	308.4	2.7	262.5	570.9	0.00457632	1.0000	0.4576%	1.8305%
135	137.3	10.5	2.0	308.4	2.7	262.5	570.9	0.00425464	1.0000	0.4255%	1.7019%
140	142.2	10.1	2.0	308.4	2.7	262.5	570.9	0.00396539	1.0000	0.3965%	1.5862%
145	147.1	9.8	1.4	354.1	2.0	308.4	662.5	0.00429875	1.0000	0.4299%	1.7195%
150	152.1	9.5	1.4	354.1	2.0	308.4	662.5	0.00402456	1.0000	0.4025%	1.6098%
155	157.0	9.2	1.4	354.1	2.0	308.4	662.5	0.00377588	1.0000	0.3776%	1.5102%
160	161.9	8.9	0.9	397.3	1.5	346.0	743.4	0.00398185	1.0000	0.3982%	1.5927%
165	166.9	8.6	0.9	397.3	1.5	346.0	743.4	0.00374952	1.0000	0.3750%	1.4998%
170	171.8	8.4	0.9	397.3	1.5	346.0	743.4	0.00353680	1.0000	0.3537%	1.4147%
175	176.8	8.1	0.9	397.3	1.5	346.0	743.4	0.00334157	1.0000	0.3342%	1.3366%
180	181.7	7.9	0.5	435.6	1.1	379.4	815.1	0.00346703	1.0000	0.3467%	1.3868%

Horizontal Distance From Pole (ft)	Distance from Antenna ¹ (ft)	Declination (deg)	1900 MHz Pattern dB Off Peak ² (dB)	1900 MHz ERP ⁴ (W)	2100 MHz Pattern dB Off Peak ³ (dB)	2100 MHz ERP ⁴ (W)	Composite ERP ⁴ (W)	Power Density (mW/cm ²)	FCC General Population Limit (mW/cm ²)	% of MPE	% of MPE with Reflection ⁵
185	186.7	7.7	0.5	435.6	1.1	379.4	815.1	0.00328547	1.0000	0.3285%	1.3142%
190	191.6	7.5	0.5	435.6	1.1	379.4	815.1	0.00311773	1.0000	0.3118%	1.2471%
195	196.6	7.3	0.5	435.6	1.1	379.4	815.1	0.00296245	1.0000	0.2962%	1.1850%
200	201.6	7.1	0.5	435.6	1.1	379.4	815.1	0.00281843	1.0000	0.2818%	1.1274%

Notes:

- Distance from antenna centerline to 6-foot height above ground level
- Amphenol CUUT360X06FX4Z0 1900 MHz vertical pattern data included in Appendix A
- Amphenol CUUT360X06FX4Z0 2100 MHz vertical pattern data included in Appendix A
- ERP is Effective Radiated Power relative to a dipole. EIRP = 1.64 x ERP
- Ground reflection modeled as 2-fold increase in field strength or 4-fold increase in power density

Ground Level MPE by Distance from Pole
as Percent of FCC General Population Limits



Figure 2: Calculated Ground Level RF Power Density as Percentage of FCC General Population Limits

In analyzing the incident RF power density at 7597 Pocket Road, the approach depicted in Figure 3 was employed. The roof of the house was estimated to be 20 feet AGL. The results are presented in Table 4 and Figure 4. While the results for reflections have been included, the likelihood of this condition decreases with elevation as the intervening surface is more distant from the direct radiowave path. Therefore, these results should be considered to be extremely conservative.

As indicated above, these results are spatial peak RF power density values. Averaging results within a vertical profile that a person could occupy is appropriate for comparison to the exposure limits. In this case, the average values will be less than the maximum MPE values in any vertical profile range.

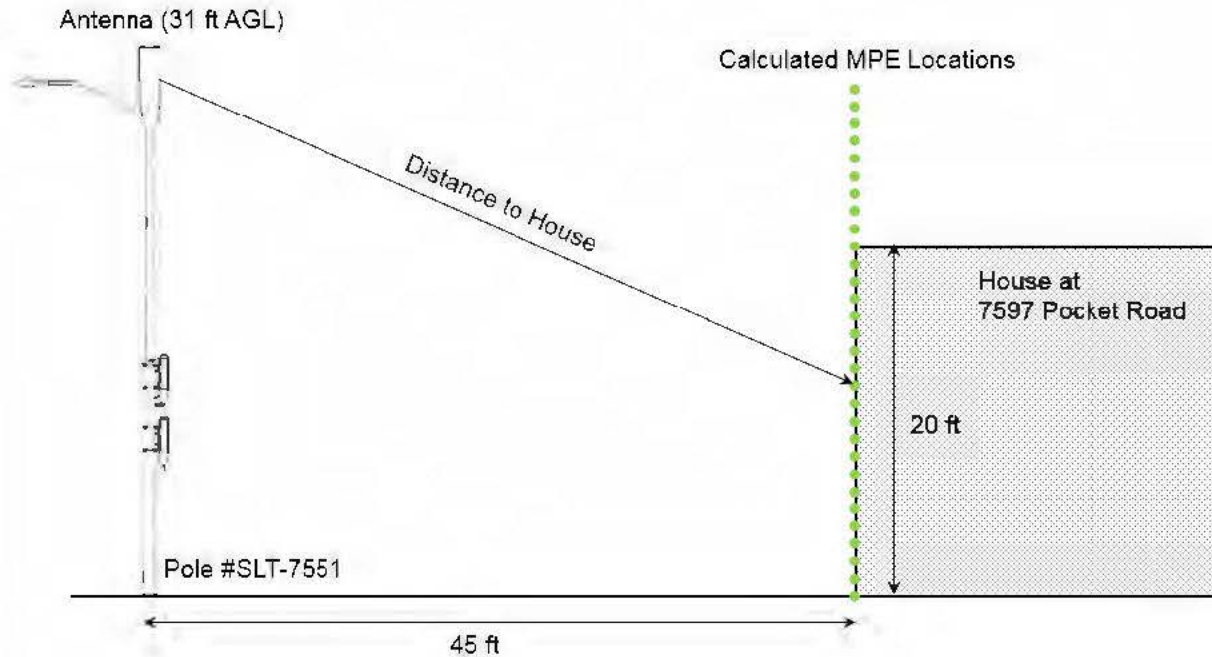


Figure 3: Incident RF Power Density Calculation

Table 4: Calculated Ground Level RF Power Density as Percentage of FCC General Population Limits

Vertical Distance Above Ground at House ¹ (ft)	Distance from Antenna ² (ft)	Declination (deg)	1900 MHz Pattern dB Off Peak ³ (dB)	1900 MHz ERP ⁴ (W)	2100 MHz Pattern dB Off Peak ⁵ (dB)	2100 MHz ERP ⁴ (W)	Composite ERP ⁴ (W)	Power Density (mW/cm ²)	FCC General Population Limit (mW/cm ²)	% of MPE	% of MPE with Reflection ⁵
0	54.6	34.6	17.9	7.9	17.3	9.1	17.0	0.00080114	1.0000	0.0801%	0.3205%
1	54.1	33.7	17.3	9.1	15.8	12.9	22.0	0.00105459	1.0000	0.1055%	0.4218%
2	53.5	32.8	16.9	10.0	14.6	16.9	26.9	0.00131990	1.0000	0.1320%	0.5280%
3	53.0	31.9	16.6	10.7	13.7	20.9	31.5	0.00157755	1.0000	0.1578%	0.6310%
4	52.5	31.0	16.6	10.7	13.0	24.5	35.2	0.00179507	1.0000	0.1795%	0.7180%
5	52.0	30.0	16.6	10.7	13.0	24.5	35.2	0.00183029	1.0000	0.1830%	0.7321%
6	51.5	29.1	16.8	10.2	12.6	26.9	37.1	0.00196530	1.0000	0.1965%	0.7861%
7	51.0	28.1	17.3	9.1	12.4	28.1	37.2	0.00201071	1.0000	0.2011%	0.8043%
8	50.5	27.1	18.0	7.7	12.5	27.5	35.2	0.00193797	1.0000	0.1938%	0.7752%
9	50.1	26.1	19.2	5.9	12.8	25.7	31.5	0.00176529	1.0000	0.1765%	0.7061%
10	49.7	25.0	21.1	3.8	13.5	21.8	25.6	0.00145992	1.0000	0.1460%	0.5840%
11	49.2	24.0	30.9	0.4	16.2	11.7	12.1	0.00070226	1.0000	0.0702%	0.2809%
12	48.8	22.9	40.6	0.0	18.9	6.3	6.3	0.00037324	1.0000	0.0373%	0.1493%
13	48.5	21.8	25.5	1.4	24.0	1.9	3.3	0.00019876	1.0000	0.0199%	0.0795%
14	48.1	20.7	19.7	5.2	45.6	0.0	5.3	0.00031878	1.0000	0.0319%	0.1275%
15	47.8	19.6	16.0	12.3	25.1	1.5	13.8	0.00084918	1.0000	0.0849%	0.3397%
16	47.4	18.4	13.2	23.4	18.2	7.4	30.8	0.00192258	1.0000	0.1923%	0.7690%
17	47.1	17.3	10.9	39.7	14.2	18.6	58.3	0.00368837	1.0000	0.3688%	1.4753%
18	46.8	16.1	8.9	63.0	11.3	36.2	99.2	0.00635185	1.0000	0.6352%	2.5407%
19	46.6	14.9	5.9	125.6	7.2	93.1	218.8	0.01416941	1.0000	1.4169%	5.6678%
20	46.3	13.7	4.7	165.6	5.8	128.6	294.2	0.01925790	1.0000	1.9258%	7.7032%
21	46.1	12.5	3.6	213.4	4.5	173.4	386.8	0.02557016	1.0000	2.5570%	10.2281%
22	45.9	11.3	2.7	262.5	3.5	218.3	480.8	0.03207350	1.0000	3.2073%	12.8294%
23	45.7	10.1	2.0	308.4	2.7	262.5	570.9	0.03839155	1.0000	3.8392%	15.3566%
24	45.5	8.8	0.9	397.3	1.5	346.0	743.4	0.05034911	1.0000	5.0349%	20.1396%
25	45.4	7.6	0.5	435.6	1.1	379.4	815.1	0.05555493	1.0000	5.5555%	22.2220%
26	45.3	6.3	0.2	466.8	0.8	406.6	873.4	0.05984760	1.0000	5.9848%	23.9390%
27	45.2	5.1	0.1	477.7	0.6	425.7	903.4	0.06217867	1.0000	6.2179%	24.8715%
28	45.1	3.8	0.1	477.7	0.7	416.0	893.7	0.06172337	1.0000	6.1723%	24.6893%
29	45.0	2.5	0.2	466.8	0.9	397.3	864.1	0.05982628	1.0000	5.9826%	23.9305%
30	45.0	1.3	0.5	435.6	1.2	370.8	806.4	0.05591581	1.0000	5.5916%	22.3663%

Notes:

- Horizontal distance from pole to nearest portion of house at 7597 Pocket Road estimated to be 45 ft
- Distance from antenna centerline to elevation at house

- 3 Amphenol CUUT360X06FX4Z0 1900 MHz vertical pattern data included in Appendix A
- 4 ERP is Effective Radiated Power relative to a dipole. EIRP = 1.64 x ERP
- 5 Amphenol CUUT360X06FX4Z0 2100 MHz vertical pattern data included in Appendix A
- 6 Ground reflection modeled as 2-fold increase in field strength or 4-fold increase in power density

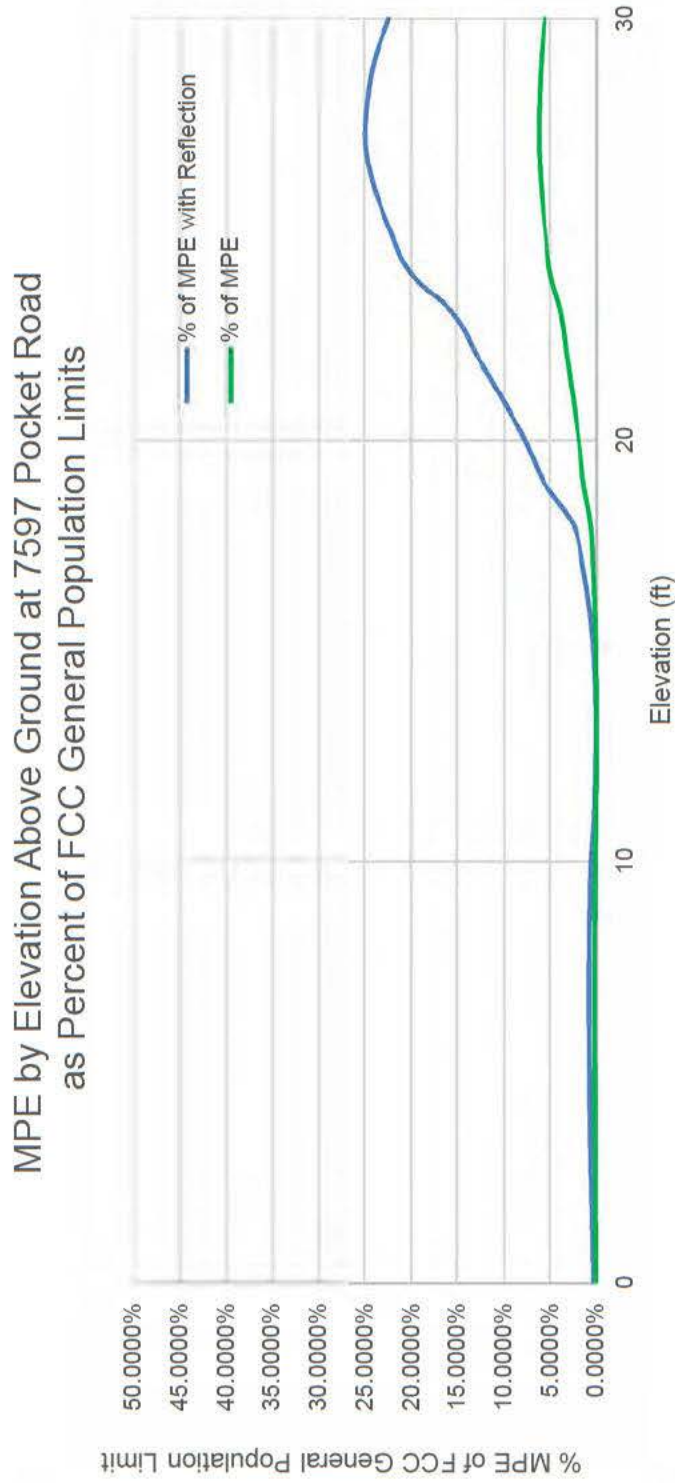


Figure 4: Calculated Ground Level RF Power Density as Percentage of FCC General Population Limits

At the antenna, equation 1 may be rearranged to determine the distance to the FCC General Population limits.

$$R = \sqrt{\left(\frac{EIRP}{4 \cdot \pi \cdot S}\right)}$$

Using the composite ERP and power density limit, the distance to 100% of the General Population limits is 12.7 feet along the boresight antenna where maximum RF energy is emitted. Waterford has developed software to predict RF power density using FCC OET-65 equations 1 and 2. The region surrounding the antenna where the FCC General Population limits exceed 100% MPE is depicted in Figure 5

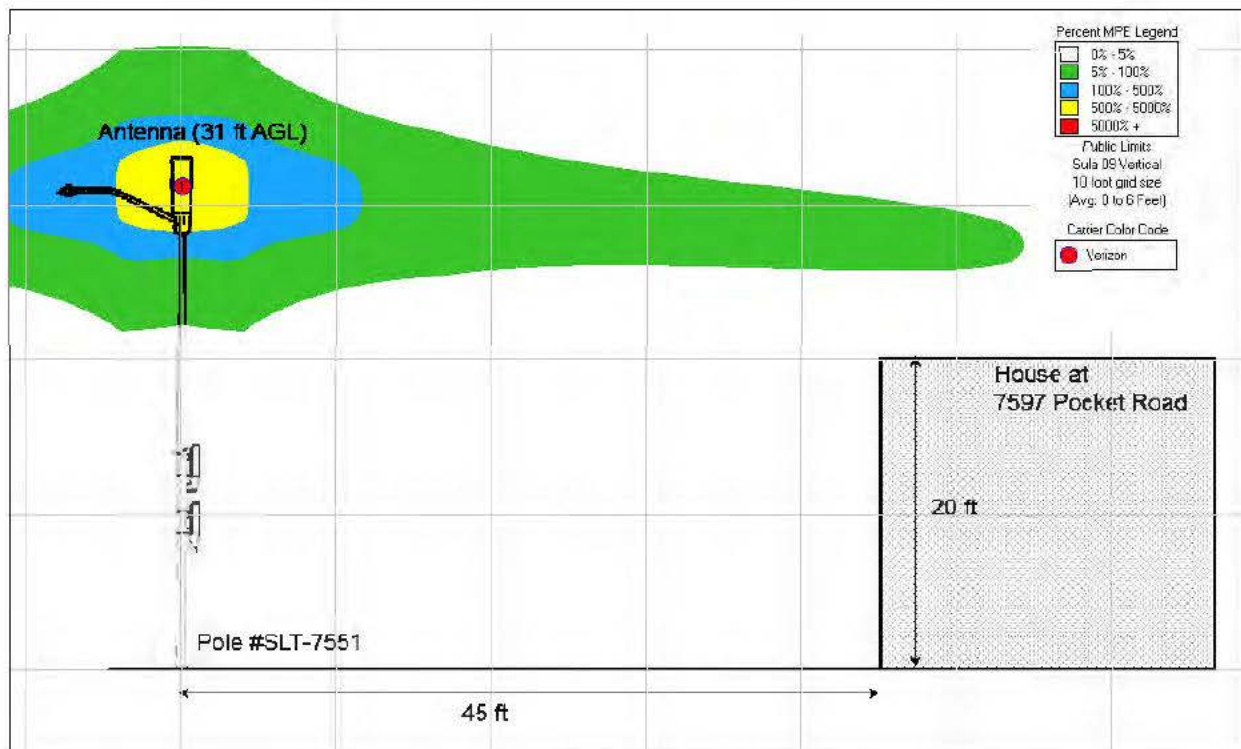


Figure 5: Profile View of Predicted RF Power Density as Percentage of FCC General Population Limits

No areas accessible to the general public are located within the calculated radius. RF alerting signs may be posted and safety protocols established for workers servicing the street light. For areas beyond this zone, no special action is required to maintain a safe environment and there is no time limit for activities in these regions.

Appendix A: Antenna Pattern Data

Amphenol CUUT360X06FX4Z0 1900 MHz

Angle (deg)	dB Off Peak
0	0.9
1	0.5
2	0.2
3	0.1
4	0
5	0.1
6	0.2
7	0.5
8	0.9
9	1.4
10	2
11	2.7
12	3.6
13	4.7
14	5.9
15	7.3
16	8.9
17	10.9
18	13.2
19	16
20	19.7
21	25.5
22	40.6
23	30.9
24	24.3
25	21.1
26	19.2
27	18
28	17.3
29	16.8
30	16.6

Angle (deg)	dB Off Peak
31	16.6
32	16.9
33	17.3
34	17.9
35	18.7
36	19.6
37	20.8
38	22.3
39	24
40	26
41	28.6
42	32
43	37.4
44	51.9
45	41.9
46	34.7
47	30.9
48	28.2
49	26.2
50	24.6
51	23.4
52	22.3
53	21.5
54	20.8
55	20.4
56	20
57	19.9
58	19.8
59	19.9
60	20.2
61	20.6

Angle (deg)	dB Off Peak
62	21.1
63	21.8
64	22.6
65	23.5
66	24.6
67	25.9
68	27.3
69	28.9
70	30.7
71	32.7
72	34.8
73	36.7
74	38.1
75	38.6
76	38.4
77	38
78	37.5
79	37.1
80	36.9
81	36.8
82	36.9
83	37
84	37.3
85	37.6
86	38
87	38.4
88	38.8
89	39.2
90	39.6

Amphenol CUUT360X06FX4Z0 2100 MHz

Angle (deg)	dB Off Peak
0	1.6
1	1.2
2	0.9
3	0.7
4	0.6
5	0.6
6	0.8
7	1.1
8	1.5
9	2
10	2.7
11	3.5
12	4.5
13	5.8
14	7.2
15	9
16	11.3
17	14.2
18	18.2
19	25.1
20	45.6
21	24
22	18.9
23	16.2
24	14.6
25	13.5
26	12.8
27	12.5
28	12.4
29	12.6
30	13

Angle (deg)	dB Off Peak
31	13.7
32	14.6
33	15.8
34	17.3
35	19.3
36	22
37	25.8
38	32.3
39	63.6
40	32.8
41	27.6
42	24.8
43	23.1
44	22.1
45	21.5
46	21.2
47	21.2
48	21.3
49	21.6
50	22
51	22.5
52	23.1
53	23.6
54	24.2
55	24.8
56	25.5
57	26.1
58	26.9
59	27.7
60	28.7
61	29.9

Angle (deg)	dB Off Peak
62	31.3
63	33.1
64	35.6
65	39
66	44.7
67	64.7
68	47.2
69	41.1
70	37.9
71	36
72	34.8
73	34.1
74	33.8
75	34
76	34.6
77	35.6
78	37.4
79	40.2
80	44.9
81	51.4
82	44.5
83	38.9
84	35.4
85	32.9
86	31
87	29.5
88	28.3
89	27.3
90	26.6